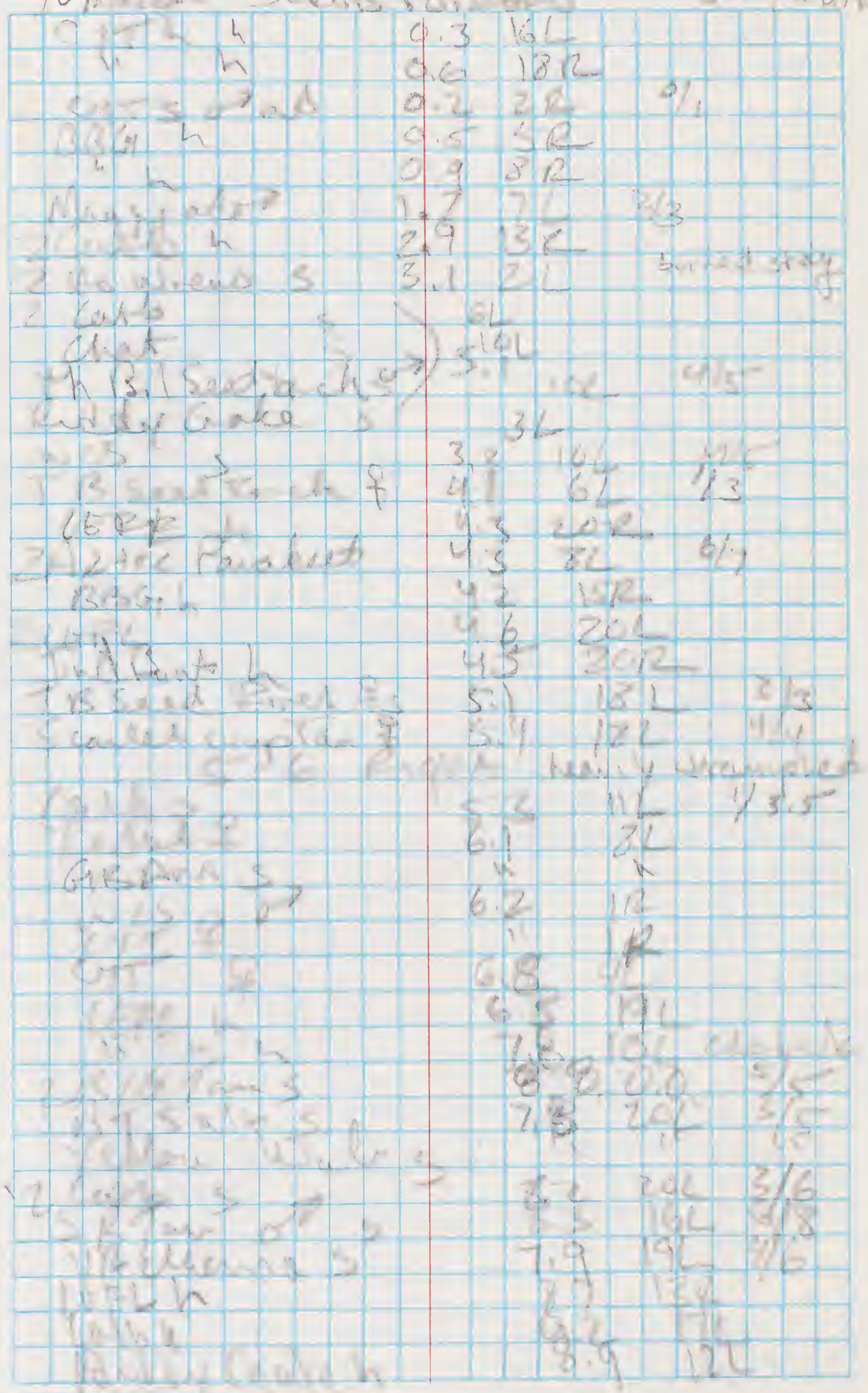
Roberto Retana
91-92 Book III

WEEK 10

670
929



Ruby Crake h		9.1	5R	
1 EPL h		9.4	14[illegible]	
" "		"	18R	
1 EPL h		10.2	16L	
2 [illegible] Bunt s		10.8	14[illegible]	
Ruby Crake h		11.3	[illegible]	
2 Cuddle [illegible]		12.6	2[illegible]	
WEVi co h		13.2	[illegible]	
[illegible]		12.8	8R	
2 LEPL h		13.2	10, 11L	
2 BBG s		13.6	6L	
LEPL s		13.6	[illegible]	
Sc Pump Tan ♂		13.8	10L	5/9
[illegible]	[illegible]	♂	[illegible]	
Yellow [illegible]				
Zi. Ka. Mango ♂		13.8	[illegible]	
LEPL [illegible]		14.[illegible]	[illegible]	
BBG h		15.1	17R	
LEPL h		15.4	[illegible]	
Catbird h		16.2	8L	
BBG h		17.2	17L	
Chat s		18.3	16R	[illegible]/2
CTT h ↗		18.3	11L	
2 BlaTan		18.3	10R	
LEPL h		17.7	13L	
"		18.6	15R	
2 [illegible]		19.3	14L	2/10
1 [illegible] h		19.7	17R	

[illegible] S	19.5	14L	1/2
[illegible] h	19.9	21R	
UP[illegible] FOREST	11 MARCH		85
3 [illegible] Tan	0.4	17L	
2 [illegible]	0.4	17R	
[illegible] h	0.3	5R	8/17
[illegible] h	0.3	21R	
[illegible] h	0.[illegible]	7L	
2 [illegible] h	0.4	8L	
D[illegible] h	0.4	8L	
[illegible] h	0.[illegible]	9R	
L[illegible] h	0.6	19L	
PB[illegible] h	0.[illegible]	19L	
2 [illegible] h	0.7	11L	
LT [illegible] S	1.1	5R	
[illegible] h	1.2	5R	GAP
LB[illegible]	1.5	6R	
[illegible] h	1.7	20L	
[illegible] h	[illegible]	5R	
[illegible] h	3.4	17L	
2 [illegible] h	2.9	16R	18/25
2 B[illegible]	"	"	
W[illegible] h	2.8	7L	[illegible]
[illegible] h	2.9	16R	[illegible]
[illegible] h	3.[illegible]	13R	
3 [illegible]	3.5	19L	
B[illegible]	3.2	15R	[illegible]
[illegible]	2.9	5L	6/23
2 [illegible] h	"	18R	
L[illegible] h	2.9	1L	23/2
[illegible] h	"	10R	
[illegible] E[illegible]	3.3	20R	
N[illegible] S	4.2	2L	2/30
[illegible]			
[illegible] h	4.4	19L	
[illegible] h	5.2	4R	
[illegible]	[illegible]	[illegible]	
[illegible] S	6.3	13R	29

2 YBFL h	6.5	14R	
BB Grebe ♀	6.5	8R	7/14
Spin Tup Plyh	6.3	6R	8/11
OB Euphonia h	6.5	18R	10/30
1 W Bill Wdcrpr h	6.7	10L	
L Greenlet h	"	"	
A. Mourner s	6.8	5L	7/13
BB Grebe s ↗	6.9	17L	8/17
B T Tyrant s	6.8	15L	13/17
Green Shrike Vireo	7.6	6R	25/32
WBPL h	8.3	17R	
L Hermit h	8.3	2R	
BT Sh Tan h	8.1	12R	10/23
Eye Ring Flatbill s	8.6	10R	9/25
2 VB Toucan h	8.4	17L	28/33
Squirrel Cuckoo h	9.2	18L	
SR Flyc h (crypt)	9.2	5L	6/28
WB Wdcrper h	9.3	10L	
W [illegible] h	9.5	8R	up
" h	9.4	15R	
CB Gnatwren h	9.4	13L	
B F Grsbk h	9.5	3R	9/20
DW Ant Wren h	9.8	10L	
WS A h	10.2	18L	
~~C SWA h~~	~~10.2~~	~~12R~~	~~up~~
PB Wdpkr s	10.5	14R	
[illegible] h	10.6	5R	vs Tum

YW [illegible] h	10.6	2R	25/27
PR Thr Becards			
[illegible] h	10.7	12L	
2B [illegible] Finch h	10.7	15L	
Trop Pewee h	10.8	13L	
Araçari s	10.7	17R	20/25
LT Hermit	11.1	8L	
↳ [illegible]			
Plain fronted [illegible]	11.4	10R	9/25
[illegible] brown [illegible]	11.5	20L	14/24
7 [illegible] Hawk	12.4	6L	
3 RS Ant Tanager h	12.3	16R	
L [illegible] h	12.7	7L	27/33
BA Saltator h	12.8	9R	"
SR Flyc s	13.5	5L	9/23
B [illegible] h	13.6	3L	20/25
L Greenlet h	13.5	15L	
YBS Sh Tan h	14.4	17L	
2 BF Grsbk	"	8L	
BT [illegible]	14.6	10R	
Cinnamon [illegible]	14.5	12R	
[illegible]	14.6	1L	
L Greenlet	14.5	2R	
C S [illegible]	14.7	7L	28/29
2 Spadebill h	15.2	11L	
[illegible] h			
[illegible] h	15.8	10R	
2B [illegible]	16.1	15R	
Red [illegible] ↗	16.5	12R	9/
PR/BT [illegible] Sh Tan	17.2	6L	
(2) [illegible] Wren h	18.5	10R	
C Greenlet	18.6	5L	
1 [illegible]	18.6	14R	
2 WB Wren	"	6L	
[illegible] Tan s	19.2	4R	3/5

C

17 Left

4x20 1	Spider	8 wh	Lb
4x40 1	Orthopt	5 br	Lb
3x12 11	Spider	5 yl	"
4x12 111	"	9 gr	"
5x22 1	Hymen	7 br	Lo
5x40 1	Spider	2 wh	Lb
6x28 111	Lepidoptera	br	[illegible]
7x23 1	Orthop	6 gr/br	Lb
3x30 11	"	7 br	"
4x37 11	Spider	2 wh	Lab
6x18 111	"	10 gr	"
5x7 1	[illegible]	3 [illegible]	LA
4x35 1	Coleop	6 [illegible]	Lb
2x30 1	Spider	2 gr	"
3x20 11	"	5 br	3
	Orthopt	50 gr	2?
23 m	Roach	10 br	Lb
	Spider	3 "	Lb
	[illegible]	3 yl	"
	Spider	9 gr	"

Chauby , [illegible]

ACHIUAL 12 MARCH ~620 - 940

Dusky Antb h	0.1	5L	
2 BT Salt h	0.2	9R	
2 Scarl Rump Tan h	"	4R	
W 1 Saur h	0.2	11L	
RB Spinetail h	0.4	3R	
2 BC Woodpkr h	0.9	15L	
WB Woodhewer h	0.8	6R	
[illegible] Fly c h	0.8	7R	
B. AntShrike h	0.5	7R	
2 BT Salt h	1.2	8R	5/2
YT Euphonia	1.1	13L	
[illegible] h	0.9	10L	
2 PB [illegible] h	1.4	14L	25/28
2 Mealy Parrot h	1.1	4L	28/28
Wedgebill Woodcrpr h	1.3	12L	
YT Oriole h	0.7	18L	
Great Antshrike h	1.5	13L	
2 YB Cacique	1.7	11L	
Crimson Coll Tan	1.7	6R	
(SWA S Swallow	1.8	20L	9/13
BTWN S > plumage	"	"	
W Bay Wren h	1.9	9L	
G AntShrike h s	2.1	1L	[illegible]
L [illegible] s	2.6	0.0	
W [illegible] h	2.7	13R	
L.T. [illegible] s	27	00	
Swift br [illegible] s	27	5R	4/21
2 BH Saltator h	3.1	18R	
Tanager h	3.2	17L	
W [illegible] h	3.7	3L	
WSFC h	3.7	15L	
[illegible]	4.2	2R	14/15
Hummer "[illegible]"		00	
Sp br Wren h	4.2	8R	
WT [illegible]	4.6	16R	9/25
Sp br Wren h	5.2	9L	
BT Hummingb h	5.2	5R	
W [illegible] h	5.9	6L	
W [illegible] s	6.2	4L	

C

LB Gnatwren h	6.4	7R	
[illegible] s ♂ ♀d	6.9	7R	9/12
RT Humming	"	"	
Dusky Cap Flych	6.7	8R	
Si hd Tody Flych	6.8	5R	
2 Bi hd Saltator h,s	6.9	10L	
2 DuA Wren h	6.7	14L	
RT Hummingb s	7.2	3R	
BT Saltator h	7.7	3R	
LB Gnatwren h	7.6	3L	
[illegible] h	7.8	13R	
Blue Winged Warbler s	8.2	19L	3/5 Vireo
2 Jacamar s	8.4	5R	9/12
Redstart ♀	8.7	13L	9/12
2 YT Oriole h	8.8	11R	
YB Cacique h	8.5	15L	
2 Variable Sd h,s	8.6	14L	7/
Slaty tail Trogon s	8.4	5R	10/13
2 BC Wren s	8.8	8L	
GO Warbler h	8.1	15L	
Scarlet Rump Tanager	8.4	4R	
4 BH Saltator	8.5	12R	
Sp Br Wren h	9.1	11L	
OT h	9.4	5R	Cana [illegible]
Si hd T Flyc h	"	"	"
RT Humming s	9.5	9R	5/10
BT Saltator h	10.2	13L	

2 BC Tityra s	10.2	13L	10/20 [illegible]
[illegible] h	9.9	9R	
RT Hummingb	10.3	1L	
W [illegible]	10.3	4R	
YT Oriole h	10.3	4L	
[illegible] h	10.4	10R	
" " ♀	10.5	5R	1/16 [illegible]
[illegible] s	11.3	1R	
RB [illegible] h	11.7	1L	
2 Sp br Wren h	11.9	6R	
CSWA h	11.8	1[illegible]L	20/25
L Hermit s	11.7	1R	
BT Saltator s	11.8	6R	
[illegible] s	11.9	10L	9/12
D A [illegible] h	12.6	13R	
W [illegible] h	13.1	5R	
2 D A [illegible]	13.6	4R	[illegible]
YB [illegible] s	13.7	6L	[illegible]
2 YT Oriole h	13.8	12R	
2 Hooded	14.3	8R	
[illegible] h	14.3	8R	
2 B [illegible] h	14.2	15R	1/10
GB Sparrow h	14.3	14L	1/3/10
SP [illegible] Wren h	14.3	11R	4/10
Scarlet Rump Tan s	14.2	13R	
Si hd T Flyc h	14.3	4R	
[illegible] bill Fl h	15.5	12R	
[illegible]	16.5	9L	
YSWA h	16.8	15R	
YBFl h	16.7	19L	
Si hd Tody Flych h	17.7	7R	
Violaceous Trogon h	17.7	8R	9/12
[illegible]	18.8	16L	
2 DuA Wren	18.6	8L	
YT Oriole h	19.2	17L	
[illegible] h	19.2	20L	
LB Gnatwren h	19.9	7L	
[illegible] Warb h	19.8	7L	
[illegible]	"	14R	
[illegible] h	19.4	20L	

C

7R

9m

Scrub Manchon Pt. 21 - NW corner of potrero on west side of Ejido. Near burial leading out of potrero

Shale Manchon Pt 8 - furthest toward excavation in corner of potrero - at base is arroyo

Pt. 19 - 125m upstream. Close to forest manchon furthest upstream. Point done on other side of stream.

Forest Manchon Pt. 17 - between 19 + 20 Samba points where arroyo makes 90° bend toward excavation. Point done on playa

Point 20 - (@ 3") - 375m from Forest manchon pt 19 &
Point 21 - ~150 upstream @ 90° bend in arroyo. Point done on playa
@ 22 - @ 150 upstream 30m from bogue manchon wt. 2 kg tools.
@ 23 - nearest to Ejido gate - seasonal arroyo?

Scrub Manch pt 21 375

Pt 19 755

YO Flyc 1 ✓ | YT Oriole 1
Grenadi 1 ✓ | Yellow Warb 1
YB Tyrannulet 1 | Yell Backed 1
GB Sparrow (1) | BC Whip (1)
Chachalaca (1) | YT Vireo (1)
Br Jay (1) ✓ | D Anhinga 1 ✓
D Cap Flyc 1 ✓ | Mangy 1
Kiskadee (1) | RH Tanager (1)
Alt Oriole (1) | Chat (1)

Rai Marchan Pt 17 811
Green Elaenia (1) | Mangy 1
YO Flyc (1) | Mel Wilson's 1
Dusky Antbird (1) | GB Euphonia 1
Alt Oriole 111 (1) | BH Trogon 1
YT Euphonia 1 | GB Sparrow 1
Yellow Warbler 1 | Roadside Hawk 1
Bl Gnatcatcher (1) | YT Oriole
RT Hummingy 1 | Scarlet Macaw (1)
~~Wilson's~~ Hooded 1 | N Waterthrush

Pt 20 825
YBFL 1 | Wilson's 1
~~Yellow~~ 1 | (SWA)
Mangy 1 | Bl Hd Parrot 1
Bl Whip (1) | Lt Blue Wt 1 7.2
BH Trogon (1) | Br Jay (1)

Yell Warb (1)
YO Fly (1) | ~~Grenadier~~ 1
GB Euphonia (1) | YB Tyrannulet
Pt 21 839
Mangrove 1 | BH Trogon (1)
Kiskadee 1 | Mangy 1
R Swallow (1) | Rt Wilson's
Bl Kinglet (1) | Yellow Warb
YBFL (1) | YO
B gnat (1) | BC Whip (1)

Pt 22 854
Alt Oriole 1 | Roadside Hawk 1
Mel Mangy (1) | Tangled Fly 1
N Waterthrush (1) | BC Whip (1)
Dusky Flyc (1) | Sulphur Fly
Yellow Warb 9 | Yellow Crt 2
BH Saltator (1) | Anhinga (1)

20 FOREST 18 MARCH 92
5

Red Cap Manakin h	21.8	13R	637 918
Fulvous Manakin h	21.1	18R	
RT Hummer h	21.3	15R	
YBT Tyrannulet h	21.1	13L	13/14
LEFL s	19.8	9L	14/23
9 RCA Tanager h	20.3	7L	5/20
7 OW wren h	21.3	18L	Cap
Scaled Antbird L	20.9	20L	
Gray Green Vireo h	20.5	17L	
3 RTA Tanager h	20.6	17L	
Ruddy Woodcreeper h	20.3	12R	10/22
2 BF Grosbeak	20.5	12L	8/13
2 LS Vireo h	20.2	5L	10/14
2 Northern Tufted Wren	20.3		9/14
Tawny Wing Wdcpr	20.3	12L	
Wilson's h	20.5	18L	
LEFL h	19.3	13L	3/20
Mangy h	19.6	7L	3/7
Buff-throated h	19.2	16L	

C

COPEZ MAYCO 17 March 92
cloudy

Pt. 1 720

Scarlet Rumped Tan 11	B Antshrike (1)
M Blackbird (1)(1)	P. vented Pigeon (1)
Sp br Wren (1)	B Jay (1)
R Nightingale 1	Sp Rumped Wren (1)
B ~~[illegible]~~ 1	GO Wpkr (1)
~~[illegible]~~ 1	Wbill Wcrpr (1)
Tr Kingbird (1)	WCS (1)
Grayish Salt (1)	CNT 1
YBC (1)	Catbird 11
YB Elaenia (1)	Ind Bunt 1
Dickcissel (11)	LBFL 11

Pt 2 Sunny 734-30

GF Wcrpr (1) 1	Orch Oriole 11
Yellow Warb 1 ?	Gray Salt (1)
YT Oriole 1	Ind Bunt (1)
Trop Kingb (1) 11	LBFL 1 (1)
~~Yell Wa~~	GB Sparrow 1
WCS 1	Clay Col Robin (1)
Chat (1)	Sum T 1
Tennessee Warb 1	Var Seedeater
BH Salt 11	Lin Wdcrpr (1)
Spot b Wren (1)	Social Fly (1)
Sqpr Cuckoo (1)	

13 March
cooling breezy

P1 RAYBACKS ECOTONE 6:45

1- P1 A1 A2 B1 B2

2 5 5 10 10 10 10 10
10 10 10

5 6 0.25 5 10 10
10 26

5 4 10 10 10 10 10 10
10 10 10 10 10 10
3

P2 2 PT FSAY 6:57
2

3 7:10
10 10 10 10 10 7

5 10 10 10 10 10 10 10 10 4:35 :50
10 10 10 10 10 10 10 10 99 3 111
6
25m

P3 PT M 7:10
2

3 10 10 10 0.25
10 10 10 10 10 10 10
10 10 10 10 10 10 4
5 30.32

Pt 4 PT FZAV NADA 725

Pt 5 PT FZAV MIN 740

2 | | | 2

5 | 0:30 | | 10 10 20 10
| | | 10 7 10 10
| | | 4

5 | | | 10 10 10 10
| | | 10 10 10

18 m

Pt 6 PT FZAV 757

2 | | 10 10 10 4

2 | 1:30 | 10 10 10 10 | 1:01
| | 10 10 10 | 4 18

5 | 10 10 10 10 10 | 10 10 9 | 1:45
| 10 10 10 10 10
| 10 10 10
| 10 10 7

14 m

Pt 3 757:30

Williams [illegible] 1 1 | [illegible] 1
[illegible] (1) | BT [illegible] (1)
[illegible] Warbler (1) | BW [illegible] (1)
[illegible] (1) | [illegible] (1)
Y [illegible] 1 R | [illegible] 1
[illegible] Wren (1) | [illegible] (1)
WCS (1)

Pt 4 [illegible] 800

[illegible] 1 | [illegible] (1)
[illegible] 10' S | [illegible]
[illegible] (1) | [illegible] (1)
[illegible] 1 (1) | [illegible] (1)
[illegible] 1 | Sp br Wren (1) 1
[illegible] 1 | Common [illegible]
[illegible] 1 | [illegible] 1
[illegible] 1 | [illegible] (1)
[illegible] 1 (1)

20 Forest (Cont'd)

BC [illegible] S	18.4	17R	5/22
[illegible] L	18.3	20L	
LB [illegible] L	18.2	20R	
[illegible] Wren L	17.6	11R	Cop
L [illegible] S	17.4	1R	
Sp br Wren L	17.5	20R	
[illegible] L	17.1	19R	
[illegible] 6 S	16.8	7R	7/10
[illegible]	16.2	1R	12/3
[illegible]			
BT [illegible] S	16.2	7R	9/11
[illegible] L	16.6	12R	
[illegible]			
[illegible] L	16.5	11	
[illegible] L	15.2	10R	
[illegible] L	15.6	5R	
[illegible]	14.7	12R	
[illegible] S		13R	

RT Hummingb h	14.5	12R	
L Greenlet s	14.7	8R	
Redstart h	14.2	7L	
BentBill h	13.2	14L	
Tanager-like Warbler s	12.7	11L	
Maggy h	12.6	18L	
Br [illegible] s	11.3	1L	
Chest Color Whpbsh h	11.3	4R	
Attila h	10.5	5R	6/15
2 Br hd Parrotlet h	10.3	10R	26/22
WBTH s	9.6	9R	9/2
Catb h	9.3	7R	2/4
2 R.C Man ♂ ♀	8.9	4R	2/4
RCB Tanager	8.5	16R	
2 LEFL h	8.3	20L	
WOTH s	7.7	2L	1/11
L Hermit s	7.6	1L	
Attila h	6.6	10L	
NOTH h	7.4	10R	
2 CatB h	6.8	1R	
" h	7.1	3L	
BG Dove s h	5.3	8R	9/0
GO Whpbh h	h	10L	
2 Green Jay s	5.1	7R	13/4
Greenish Elaenia	5.3	10R	9/12
BB Grosbeak h s	5.3	6R	10/0
3 RC Manakin ♂ 2♀	5.1	5L	9/12

LT Hermit s	5.1	1L	
Lesser Greenlet h	4.5	10R	
WBWWren h	2.6	6L	
LV bill Wcreeper h	3.6	8R	
Redstart [illegible] s	3.6	3R	4/5
[illegible]	3.1	5L	
ON CACAOS	8.5	0	
2 Lesser Greenlet	1.9	4R	10L
Bentbill h	2.3	13R	
RTA Tanager h	1.8	19R	
2 Jacamar h	2	10L	
2 Bushtit Tanager s	1.2	7L	21/22
Green Elaenia h	1.2	15L	
L Hermit LBK	0.9	9L	
Clay Col Robin h	0.1	20R	
Br Cr Fly h	0.2	2L	
Lesser Greenlet h	0.3	7R	
2 Or Oriole h	0.2	9L	
[illegible] h	0.1	19R	

CACAO 19 MAR 92 — Rain 926; Sun 626

VO FWL h	19.7	8R	19.1 2R	
2 Redstart h	19.5	15L	3/4	Cacao Edge
RS Sparrow h	19.5	15L	8/9	
BS HN ♀	19.4	2L	17/24	
Clay Col Rob h	19.3	18R		
LV bill creeper h	18.4	16R		
3 [illegible]	18.2	2L	23/23	
[illegible]	18.9	19R		
2 [illegible]	18.7	17R	18/22	
[illegible] h — massy	18.1	17R		
LEFL h	18.3	11L	9/1	
Ru. Antwren h	16.8	13R		
Greenish Elaenia h	17.5	18L		
WBGL s	17.8	6L	13/4	
Lesser Greenlet h	16.8	10L		
4 [illegible] Warb	16.5	3L	19/15	
WBWWren h	16.6	11R	11/24	
Chest Color Whpbk h	16.6	15R		
BB Grosbeak h	16.2	8R	2/22	

OB Sparrow h 16.1 2R 0/28
VD Flyc h 16.3 15R
BA Trogon h 15.8 20R 18/26
WB Toucan s
LT Bnth h 15.5 2L
Sepia Cap Flyc h 15.6 20L
Ant h 15.3 11L 15/29
WB Wdcrpr h 15.1 5L
WB W Wren h 15.3 20L
2 YBFL h 15.2 2R, 10R
BC Wdpckr h 14.8 8L
Gr G Flyc h 14.5 15R
Ruddy tail Fly s 14.8 1R [illegible]
2 DNA Wren h 14.8 11L
A Tanager 15.1 6L
2 L Greenlet h 14.3 16L
YT Euphonia s 14.3 10L 12/14
Sepia Cap Flych 13.7 18L
ESWA h 13.7 7L 12/22
Crest Guan s 13.4 20L 4/22
Sp Hd Wdcrpr h 13.5 11L
AT Hmm s 12.8 3L 14/22
Purple Crown Fairy ♀ " " "
Sp Hd Wdcrpr h 11.9 17R
WC Manakin h 11.4 6L
W Bl Wdcrpr s 11.1 5L 28/7
VBFL s 11.5 2L 11/15

Sp TA ♀ 11.5 2L 11/15
[illegible] 10.4 3R
S B Flyc h 9.6 17R
Str Hd Wdcrprs 9.1 10L 14/22
[illegible] h 9.3 20R
YD Fly s 9.1 1L 8/10
[illegible] s " " 8/10
BT NW h 8.6 15L
[illegible] h 8.8 6R
[illegible] h 8.8 5R 18/20
[illegible] Greenlet h 8.7 8R 19/20
[illegible] Fly h 8.3 17L 22/22
C Guan s 7.8 4R 13/12
[illegible] h 7.5 20L
[illegible] Greenlet s 7.5 12R
[illegible] ♀ 6.9 5R
[illegible] s 7.2 16R
2 [illegible] s [illegible] " "
C S[illegible] h 6.9 6L
[illegible] Fly h 6.1 17R 15/26
Green [illegible] 5.8 12R 10/
[illegible] s 5.5 9L 13/23
S B Fly [illegible] s 5.1 6R
Vicl [illegible] s, h 5.2 9R 19/20
2 [illegible] 2.9 [illegible]
2 [illegible] 3.3 [illegible]
[illegible] 1.9 [illegible]
[illegible] h 4.1 12 [illegible]
2 [illegible] h [illegible] 1.9 [illegible]
[illegible] h 1.7 [illegible]
2 BR Wren h [illegible]
[illegible] h
[illegible] h 1.8 [illegible]
[illegible] h " 9L [illegible]
[illegible] " 8L [illegible]
Baw ♀ s
Str Hd Wdcrpr h 1.3 [illegible]
[illegible] h 1.8 [illegible]
[illegible] s 1.3 5L [illegible]
[illegible] h 1.2 [illegible]
[illegible] 1.1 8L

YO Fly h 1.3 14L 7/14
YSFL h 0.2 2R 3/7
GAB Spinetail s 0.4 7R 0/4
YBC s 0.3 6R 0/3
Wilson's h 0.3 2L 2 Degrees

ACANAUAL 23 MAR Sunny 620
Van Seedeater h 19.7 2L 865
2 Sp br Wren h 19.7 18L
3 B thr Salt h 19.6 6L
Redst h ♂ ad 19.2 6L
YB Cacique h 19.4 9L
D. Ant b 19.5 20L
L. Hermit s 19.4 6L
Jacamar h 19.3 19L
B. quit h 19.1 14L
D. Antbird h 18.9 10R
2 Dw A Wren h 18.9 5L
Kentucky h 18.7 2R
B thr Salt h 18.8 10R
Wilson's h 17.8 3R
L. Hermit s 17.9 0.0
Spadebill h 18.3 10R
2 B Jays
Gray Col Rob h 17.7 15R
Redst h 17.6 8R
WB Wren h 17.1 6R 1/4
Spot br Wren h 16.8 11L

S hd T Fly h 16.8 8R
Wilson's ♂ s 16.6 3R 2/6
Redst ♂ ad 16.6 3R 7/4
Spadebill h 16.4 9L
2 Dove
- white vent
- Red legs
- Big - ish
- Light dark on head, darker thru back
- Black eye - touch of wht rear of eye
- Black bill
- " line ext. from mid-eye to mid-bill

Wilson's h 15.9 2R
2 B T A Tanager h 16.1 9L
2 Bush Fl h 15.7 7R
Magnolia h 15.7 3R
Wilson ♂ 15.2 7R
S T A ♂ ad 14.8 14R 10/14
GB Spinetail h 14.6 20L
3 B T A Salt h 14.6 10R
WB Wren h 14.5 8L
Wilson's h 14.3 10R
B thr Salt h 13.8 5R
Sc Rump Tan s 13.8 7R
Redst s ♂ ad 13.9 1L
Araucan h 13.2 3L
WOTM s 13.1 3R 6/13
B. Antshrike h 13.6 17R
S hd T Fly h 12.6 9R
2 Sp br Wren 12.7 5R
B thr Salt s 12.8 20R
Yell Warbler ♂ 12.4 1L
Sc Rump Tan ♀ 12.4 5L
B Antshrike h 12.3 9L
Mo Dove ? 11.5 17R
Redst h 11.5 5R
(w/ a Scarlet Rump Tan?)
D Antb h 11.5 6L

14B Toucan h	11.6	10R	
Mangay s	11.3	20L	
~~Redst A h~~	~~11.3~~	~~6R~~	
M.T. Hyra s	10.9	16L	Bursen
Wilson } Redstart ♀	10.9	11L	
R.B. Spinetail h	10.5	16L	
YB Cacique h	10.6	13R	
Mangay s ♀	10.8	14R	
LBFL h	9.8	7R	
Rub thr Humm ♂ s	9.7	7R	
2 B thr Salt h	9.6	10R	
W Bush cape s	9.5	12R	
Social Fly s	9.2	5L	[illegible]
2 Scarlet Rump Tan s	9.2	6R	
C.T. h	9.3	4R	
D Cap Flyc s	9.1	9L	
2 YB Cacique h	8.9	10R	
Tenn Warb s	9.1	18R	[illegible]
~~B Antshrike~~			
YT Oriole h	9.3	20R	
GB Sparrow h	8.7	8R	
B[illegible]it s	8.8	10L	
Viol Trogon s	8.4	4R	
Mangay W	8.7	0L	
B Antshrike	8.3	2R	
D. Antbird h	8.1	2R	

2 BC Wdpkr h	8.1	13L	
Mangay s	7.3	7L	
W. Vireo h	7.7	8R	
" h	7.4	6L	
BTA Tanager h	7.5	16R	
GB Sparrow h	7.6	7R	
2 SC Rump Tan h	7.2	13L	
Wilsons s	6.6	12L	
2 BH Salts	6.7	14R	
Wilson Warb ♂	6.2	9L	6/23
BF Jay h	6.2	11L	
B thr Salt h	5.8	7R	
Clay col Robin h	5.9	5L	
OB Sparrow h	5.9	1L	
WCS h	5.5	5R	
D. Antbird h	5.1	8R	
2 BWA Antwren h	4.9	2R	
Str hd Wdcrpr h	4.7	14R	
Sp b. Wren h	4.8	5L	
2 YB Cacique h	4.8	20R	
Jacamar h	4.1	1R	
Wilsons h	3.8	6R	

CICADAS 8:20

L. Hermit s	4.2	0.0	
Sep Cap Flyc h	4.2	1R	
YBFL h	3.9	20R	
Lesser Greenlet h	3.6	2R	
Str hd Wdcrpr h	3.3	5R	
B thr Salt h	2.7	4L	
[illegible] Beard ♂	3.1	2R	20/20
Cinnamon Becard h	2.7	6L	
[illegible] Tail Humm s	2.9	9R	
2 BC Tityra build nest	2.4	18R	1/2
YD Fly h	2.1	10L	
[illegible] h	1.3	15L	
2 D. Antb h	0.5	7L	
Mangay ♂	0.2	[illegible]	
001			

Cloudy, cooler
Bosque Mauricio Loma

Pt 1 — 753

Sp br Wren ♂ (1)
Or bill Sp (1)
GB Sparrow 1
Yell Warb 1
? Wren 1
WB Emerald 1
Buthr Sali 1
SUTA 1
Redst ♀ 1

Pt 2 — 807

M Blackb (1)
YB FL 1
Sc Rump Tan 1
N Waterthrush 1
Band Backed Wren (1)
Green (1)
VO Fly (1)
~~Redst (1)~~
[illegible] Flycat 1
Sp br Wren 1
Ruddy Ground Dove (1)
KB Toucan (1)
Redst 1 ♂ ♀
F[illegible] A Tan (1)

Pt 3 R R — 35

YB FL 1 (1)
B [illegible] 1
O Alt Ob (1)
RL Parrot (1)
BB Gr Sbk (1)
Hooded 1
Altala (1)
Green Elaenia (1)
Redst 1
[illegible] A Tan (1)
CB Sparrow (1)
BH Sali (1) 1
VO Fly (1)
[illegible] Wren
~~[illegible]~~
YB Cacique (1)
[illegible] (1)
[illegible]
Clay Col Robin (1)
Wilsons 1

Gr[illegible] (1) — LBFL (1)
D Ant bird (1)
CACAO Pt 19 915
Cloudy

[illegible] Greenlet 1
[illegible] 1
Gr[illegible] (1)
Sp br Wren (1)
Tenn Warb 1111
VO Fly 1
[illegible] (1)
B [illegible] (1)
CB [illegible] (1)
[illegible] 1
YT Euph 1
W[illegible] 1
Bl [illegible] Dove (1)
[illegible] (1)
Redst 11
M Blackb (1)
YB FL (1)
GH Flyc 1
WB Emerald 1

Pt 20 — 929

Redst 1
SUTA (1)
Clay Col Robin (1)
Wilsons 1
Sp br [illegible] 1
[illegible] (1)
[illegible] (1)
D Antb (1)
G Ant[illegible] (1)
ChaA (1)
[illegible] 1
Sep Cap Fly 1
SUTA (1)
YO Flyc (1)

Pt 11
Pt 12 ~200 m upriver
13 ~250 m past cultivo on right. Bet cana on right & scrub on left
14 ~140 m upriver Before [illegible] & Milpa
15 ~175 m upriver. Turn right on path under ceiba. Further to right ~25 m on path.

16 - ~200 m from pt 15 Follow Milpa
At large tree fall in Milpa
walk ~25 m along camino
Near small willow clump
17 - Along rio. Reach two track of
tractor. Pt. 17 is in scrub ~30 m
from rio on 2-track before
path turns to left
18 - ~150 m from pt 17 along 2-track
19 - Follows 2-track ~175 m till
path from right comes in. ~30 m
on path
20 - On 2-track past Cacao
~250 m

SCRUB 25 March 97 Chajulito Sunny/fog

CYT 11
Melodius Blackb (1)(1)
BBG (1) 1
YBC 11
N Roy Flyc (1)
Strip Cuckoo (1)
Yell Warb 1
B Antsh (1)(1)
W winged Dove ? (1)

Pt 11 638
WCS 1
LBFL 11
Palebill [illegible] (1)
Clay Col Rob (1)
Ruddy Crake (1)(1)
Br Jay (1)
Sp br Wren (2)

→ now has head-high corn
on left and partially in it

Pt 12 Sun/Fog 653
CYT 1
Gray Salt 1
Com Td Fly 1
Strip Cuckoo (1)
Viol. Trogon (1)
Sc Rump Tan (2)
Orchard Oriole (2)
Gr Antsh (1)

WCS 1 (1)
M Blackb 1 (1)(1)(1), 2
Social Fly (2)
Red lored Parrot (2)
BBG (2)
Kiskadee (2)
Yell Warb ♀ (1) 4
Cathird (2)

Pt 13 Sun/Fog 708
BBG 11
Gray Salt (1)
BH Salt 1
Gr Antshrike (1)
Ruddy Crake 1
Trogon [illegible] (2)
CYT (1)
LBFL (1)

WCS (1)(1)
Str hd Woodcr (1)
M Blkbd (1) 2
YT Oriole (1)
Yell Warb 1
Rud Grnd Dove (1)
NB Cacique (1)
B Hd Saltr (1)

Pt 14 Sun/Fog 721
Mag [illegible] 1
[illegible] (1)
MBFL 1 5/10
[illegible] ♂ 1
Yell Warb (1)
Orchard Oriole (1)
Social Fly (1)
YO [illegible] (1)
Band Back Wren (1)(1)
[illegible]
YT Oriole (1)
Strk hd Woodcr (1)
Trop Kingb (1) [illegible]

Comm Tody Fly (1)
B Hd Salt (1)
BBG (1)
B [illegible] 1 (
Kiskadee (1)
Rud Gr Dove 1
Sp [illegible] (1)
WCS (1)
Comm Tody Fly (1)
M Blackb (1)
Gr Antshrike (1)
CYT 1

Pt 15 Sun/Fog 710

B/G Tanager 11 | Yew Seed ♀ 1
Social Fly (1) 1 | Streaked Wea 1
Comm Tl Fly 1 | Chat 1
BAnt Shrike (1) | Br Jay (1)
Gray Salt 1 | Magpie 11
YT Euph 2 | Sulf bell Fly 11
Laughing Falcon (1) | GF Woodpkr (1)
Ruddy Crake (1) | WBV (1)
Yell Warb 1 ♂

Pt 16 Hazy 804

Right half of point clear now, in head high cane

Yell Warb ♀ 1 | Blue Gr Dove (1)
Gray Salt 1 | W bill Wcrp (1)
Trop Kingb 1 | Social Fly 1
Groove bill Ani 1 | Chachalaca (1)
Mel Blackb (1) | YT Oriole (1)
Slt Tod Fly 1

Pt 17 Haze 821

W(S) 1 | YT Oriole 1 (1)
BT Salt 1 | Social Fly
Str hd Wcrp (1) | (?) Heart 1
Yell wing Chlorop | Golt ♀ 1
DC Fly (1) 1 | B/G Tanager 11

WBV 1 | YW Tan 1
BBG (1) | YBFL (1)
Yell Warb 1 ♂ | BC Tityra (1)
Sc Rump Tan (1)

Pt 18 Sunny 839

WCS 1 | V1 Trogon (1)
Gray Salt 1 | Scarlet Rump Tan 1
WBV 1 | Social Fly 11
Tennessee Warbler 1 | BBG (1)
Yell Warb (1) | GH (1)
B/G Tanager (1) | YB Cacique (1)

Pt 19 855 | 75% Maize Sunny

WCS 1 | Sc Rump Tan 1
(?) 1 | Wilson's Warb 1
Mel Black (1) | BT Salt 1

Pt 10 Hazy Sun 918

RB Spinetail 1 (1) | Sp br Wren (1)
BBG 1 | Social Fly (1)
GH 1 | Gray Salt (1)
Ruddy Crake (1) | WCS 1
Buff thr Salt 1 (1) | Chat 1

Pt: 1, 2, 11-15
F#1, G#1 G#7, F#6

POINT COUNTS 26 MAR Breezy Cloudy 638

Pt 1

Lesser Greenlet (1) 1 | R thr A Tan (1)
(?) (1) | GC Woodcr (1) (1)
(?) (1) | RC A Tan (1) 1
(?) (1) | B Jay (1)
Sp br Wren (1) (1) | (?) 1
Str hd Wcrp (1) | (?) (1)

C

F.G. Pt 1 Slight drizzle 6:55

BF Grosbeak (1)
Sp br. Wren (1)
B thr Salt (1)
O. Antbird 11
Gr. Antshrike 1
WB Wren 1
M T. Hpa 1
L Greenlet (1)
Kentucky (1)
IU bill Wcrp (1)
Gr Sm Vireo (1)
Gr Antshrike (1)
B thr Fol Gleaner (1)

OB Sparrow (1)
Attila 11
(1) W B Wdcrpr 1
R. Mourner (1)
Magg 1
YO Fly (1)
YBFL 17m
Cr. Becard
WOTH (1)
Sp br Wren (1)
RT Jacamar (1)
Mealy Parrot (1)

FG 6 Cloudy Duplicate 7:38

Sl Tail Trogon (1)
Sp br Wren (1)
RT Antbush (1)
RT Ant Tan (1)

BB Toucan (1)
Sl [illegible] (1)
BF Gr[illegible] (1)

Forest Gap 7 G 7:59

RedSt (1)
YBFL (1)
Sl br Tinamou (1)
Attila (1)
Wood Thrush 1

WB W Wren (1)
BB Toucan 11
Sp br Wren 1
Gr Sm Vireo (1)
Magg 11

Sing 1

Smoky br Wdpk (1)
W bill W dcrpr (1)
L Greenlet (1)
R. Mourner (1)

WB Wdcrpr 11
Pika (1)
Mot Mot (1)

Forest Gap 6 Cloudy 8:02

Sl Tail Trogon (1)
Sp br Wren (1)
Sl br Tinamou (1)
BF Grosbeak (1)
Mot Mot (1)
YBFL 10m 1 (1)
RT Ant Tan (1)
V Trogon (1)
[illegible] (1)

LB Gnatwren 1
Attila (1)
RC Manakin 11
Gr Sh Vireo (1)
SB Pigeon (1)
BF Antthrush 1
KB Toucan 1
Magg (1)

FG 8 Cloudy/Drz 8:18

Kentucky 1
OB Fly (1)
~~[illegible] Man (1)~~
~~[illegible] (1)~~
RC Ant Tanager (11)
IU bill Wdcrpr 1
GC Warbler 11
R thr A Tanager (1)
L Greenlet 1
Gr Jay (1)

B thr F G 1
W B W Wren 1
RT [illegible] 1
Sp br Wren (1)
Viol Trogon (1)
WOTH 1
L. Gnat [illegible] 1
W B Wdcrpr 1
LB Gnatwren (1)

Forest Gap 7 Cl/Ovrc 8:32 10

[illegible] 1
R [illegible] (1)
[illegible] (1)
Mot Mot (1)
V Trogon (1)
Magg (1)
Sp br Wren 1
Sq Cuckoo (1)
[illegible] Dove (1)

YBFL (1) → 20
TC Greenlet (1)
WB Wren (1)
WB Wdcrpr 1
B thr Sl [illegible] 1
[illegible] Rob 1
LB Gnatwren (1)
D. Antshrike (1)
Gr Jay (1)

C

Cloudy
cooled

6 20
9-05

ARB PAST EDGE 27 MAR '92

UFFL h	11.8	18L	
BBGr h	11.9	6R	
SB Flycatcher	11.1	2L	13/20
2 S House Wren	11.3	5L	
♀ Redst	11.5	18L	7/7
Yellow Warbler ♂ad	11.5	1R	1/3 Pust born
Br Sault h	11.3	17L	
7 Sc. Rump Tanagas	11.2	14L	
Lincoln's Sp s	11.1	3L	8/4
BBGr h	11.2	6R	
YBC h	11.1	7L	
Crimson Coll Tan h	11.4	6L	
WBWdcrpr s	11.2	20L	8/1
2 Cathird h	11.1	18L	
Catb s	11.1	10L	1/5
2 M Blackbird s	11.1	9L	8/20
Sp br Wren s	11.2	8L	9/4
Clay Col Rob s	11.1	5L	4/4
Lin's Spar s	10.8	5L	2/4
BBGr s	"	"	3/4
Wilsons ♀	11.1	4L	1/2
WCS h	11.1	8L	
Magg s	10.6	14L	3/2
LEFL h	10.9	9L	
Br Fly s	9.9	6L	6/2
Sulph bell Flyc s	9.5		

UFFL s	9.9	7R	
Mourning Doves	9.9	0.0	
2 Pale Vented Pig			
Variable Seedt	13		
BC Wdpkr	9.5	16R	11/17
BT Sault	17/12		
Social Fly s	"	"	17/17
2 Red leg Honeycreepers	9.1	13R	17/24
M Blackbird s	9.3	3R	8/1
B Crest Fly s	9.2	5L	8/9
WBFL h	9.3	10R	8/10
UFFL h	8.5	3R	
B Hd Sault h	8.3	10L	8/12
Buddy Crakeh	8.4	7R	
Magg s	7.6	11L	15/4
LEFL h	8.7	15L	
SB Fly s	8.5	12L	8/6
WCS s	"	12L	9/1
CIT h	"	13L	
Masked Tanager	7.8	14L	10/1
2 YBC	"	16L	9/1
LEFL	"	10L	9/1
YC Tan Warb ♀	7.6	14L	10/1
WCS h	7.5	13L	
CIT	7.2	5R	
2 YBC h	7.7	15R	
WCS s ♂	6.2	16L	
" s ♀	6.4	17R	
UFFL h	5.2	7R	
Catb	5.5	10L	
"	4.8	6R	0/9
Catb h	4.5	5R	
WCS h	4.3	5R	8/10
Catb h	4.7	8R	
Catb	4.1	9L	
L. Greenlet h	3.9	15R	
Wilson's Warb ♂	3.8	2L	3/2
2 Scar Rump Tan h	3.7	10R	9/1
GD Wdpkr s	2.8	11L	7/2

C

Lean insect Lb plains

No Oriole m♂	2.5	5R	7/8
2nd Bwnt h	2.7	8R	
LBFL h	2.8	7L	
2 Blk Tanager h	2.5	7R	
Spbr Wren s	1.9	6L	
2nd Bwnt h	2.1	9L	
CaAb h	1.8	20R	
LBFL h	1.6	7L	
2 Sc Rump Tan	1.7	12L	
CaAb s	1.5	17R	9/8
~~Wilson's h~~	~~1.3~~	~~6R~~	
Hooded o♂	1.2	2R	10/8
Redst ♀ s	1.3	12R	
KB Toucan s	0.8	10L	
Trop Kingbs s	1.3	20L	14/23
LBFL h	1.3	18R	
2 KB Toucan	1.3	17R	15/23
CaAbs	1.1	3L	
CSWA h	1.1	5R	17/20
Wilson's h	0.9	6R	
2 WB Wdcpr h	12.1	20R	
Wilson's h	12.2	3L	2/4
2 Spbr Wren	12.3	13R	
L Greenlet h	12.3	10R	
4 Tenn Warbl s	12.4	3R	8/
L Hermit h LEK	"	14R	
2 WBT Euphonia h	"	16R	

~~LBFL h 12.~~

YBSC h	12.8	15R	9/16
YBFL h	12.9	13R	8/12
Squir Cuckoos	14.0	12L	1/6
" "	14.3	17L	
White-neck Puffbirds	16.7	13R	9/15
Pauraque C	17.4	7L	
LBFL h	18.3	20L	
2nd Bwnt h	18.8	18L	
CaAb h	19.2	23R	
2 Blue Grosbeak Jacamar	18.9	7L	4/2

NAOTA

LBFL	11
Redst	2
Yellow	2
Lincoln	2
YBC	6
CaAb	10
Wilsons	4
Magn	2
YBFL	2
OWT	2
NWTH	1
No Oriol	1
2nd Bwt	3
Hooded	1
CSWA	1
Tenn W	4

16/54

Cloudy → Ptly Cloudy

905

UPLAND FOREST 28 MAR '02 610

R thr Ant Tan h	0.4	16R	
Scaled Pygan h	0.2	3L	24/24
Azure Parakeet h	0.4	10L	10/10
Lesser Greenlet h	0.7	6R	08/21
DWA Wren h	0.6	20R	
L.T. Hermit s	0.5	2L	
R C A Tanager h	1.1	17R	
2 D. Antbird h	1.3	3R	0.5/4
Sp br Wren h	1.3	19L	
Gr Jay h	1.4	15L	
Olivaceous Woodcr h	1.6	18R	
D Antbird h	1.7	8L	
WBWWren s, h	1.7	1L	
B thr Tiger Heron s	1.8	12R	7/15
L. Greenlet h	2.2	20R	
T. C Greenlet	1.8	7R	
Mayan h	1.7	16R	
YBFL h	2.5	13L	
WorTH h	2.6	18R	
2 OB Sparrow h	2.7	13L	
Green Sh Vireo	2.5	8R	
WotTH h	2.1	18R	
Bl faced Antthrush h	2.7	11R	
WB Woodcr h	2.6	13R	
WBFL h	3.4	14R	
GS Vireo	3.2	13L	27/32

BB Grosbk h	3.9	20R	
RCA Tanager h	3.8	9L	
DWA Wren h	4.2	14L	
2 R thr A Tan h	3.9	18L	
YAT Tan h	4	20L	
WBWWren h	4.2	10L	
Mayan h	4.3	5L	15/23
2 Cr. Gray Coll Tan h	4.2	7L	"
Ca Ab h	4.7	15R	
Kentucky h	5.2	18R	
SC Flycatcher s	5.4	4R	9/14
2 R thr A Tan h	5.7	17L	
B. guan h	6.2	3R	21/24
OB Sparrow h	6.2	12L	9/4
L. Hermit h, s	6.3	1L	
2 Sp br Wren h	6.3	7L	
Sep Cap Flyc h	6.2	4L	4/6/22
2 TC Greenlet h	6.5	8R	
White Hawk h	6.5	1R	(18L)
L. Greenlet h	7.3	14L	7/29
CSWA h	7.5	10L	20/23
W bill Woodcr h	7.8	19R	
	7.6	10L	10/15
W B Woodcr s	8.1	19R	16/18
YBFL h	8.4	10R	7/13
Xenops s	8.4	3L	2/22
Catbird h	8.2	15L	20/3
3 A. Woodcr h	8.5	7R	18/23
2 DWA Wren h	9.5	9R	Grp
L. Hermit s	9.4	1R	
2 D. Antbird h	9.4	9L	Vireo
2 CA Bird h	9.5	12R	Grp
2 RCA Tanager h	9.6	6L	
Plain Ant Vireo h	9.8	5R	9/10
WB Wwren h	9.9	13L	
Wilson h	9.5	6R	
2 Pale bill Woodcr	10.3	19L	
2 Sp br Wren W	9.9	15L	
Gr Antshrike s	10.3	6L	7/14
1 Gr Woodwren h		18L	

SWA h	10.4	18L	
BC Tityra h	11.3	7L	14/18
Sooty brown Warbler	11.2	13R	
GC Warbler	11.4	6R	6/15
Wilson's ♂	"	11R	9/15
RC Ant Tanager	"	8R	8/15
2 Lesser Greenlet h	11.7	7R	
Swainson's Thrush s	11.8	5L	2/30
LSWA h sing	12.3	3L	26/28
Swainson's Thrush h	11.9	18R	
Sepia Cap Fly h	11.7	7R	
GS Vireo h	11.9	12R	17/2
WC Manakin h	12.2	12R	3/31
Wilson Warblers	12.4	19R	
2 Sp bt Wren h	12.5	14R	
BB Grebe h	12.7	20R	
YB Tyrann. h	12.5	19R	
TC Greenlet h	12.4	20R	
WB Woodcreeper h	12.8	9R	35
OB Sparrow h	13.3	16R	
Kentucky h	14.2	4R	0/4
LT Hermit s	14.1	2R	
YT Euphonia h	14.3	1L	15/
2 Red thr Ant Tan	14.5	6L 4R	
BB Grosbk h	14.8	9L	
2 BF Grosbk	14.5	15L	
3 Catb s	15.7	5L	

Gap

(B.T. Hummingbird) 15.7 12R

White Manakin h	16.2	15R	9/27
Wood h	16.4	20R	
Redst h	16.5	19R	19/34
YO Flyc h	16.9	20L	
YBT Greenlet h	19.5	18R	10/16
Water Redstart s	18.4	4R	
2 Ant Wren h	18.5	8L	Gap
Magpie h	18.6	18R	

CACAO 29 MAR 92 Cloudy 620 / 910

Redst h	0.2	8L	} 8/14 edge
BH Saltator h	0.1	8R	
Catb m	0.1	10R	
2 M Redstart h	0.2	15R	
2 Sp br Wren h	0.9	12R	edge
WO Warbler h	0.6	9R	0/4
CB Toucan h	1.5		

PAB(O - Unknown Bird — Scarlet Tanager ?)

Dusky Cap Fly	1.1	18R	culture
RT Hummingbird h	1.4	9R	
3 B Tanager h	1.3	8R	19/30
Redstart h	1.3	1R	26/30
Wilson's	1.8	5R	cacao
WBF h	2.2	20L	
Slaty Ant Tanager s	2.8	9R	fund
3 Magpie Tanagers	3.2	18R	25/26
Redstart ♂ ad	3.2	9R	17/26
YO Flyc h	3.3	3L	20/25
Magpie s	3.3	2R	

LOOK UP MIGRATION PATTERN OF SOUTH MIGRANTS IN Costa Rica

Wilson h	4.2	17R	Cacao
2 Sp bh Fly h	4.2	13L	22/28
WBST s ♂ ad	4.3	8R	25/29
CSWA	4.1		

Sound similar in voice but Rough & Belted King

C

2 Masked Tanagers 5.1 1R 14/18
3 Rufous-th A Tanager h 4.9 17L
YD Phe h 5.1 15R
Attila h 5.1 1L 20/25
Red Manna s 5 4 13R 21/22
SUTA h 6 2 10L
YBFL s 5 8 16R 13/12
Rosb(?) Grosbk ♂ad s 6.5 9L 15/20
BT Salt s " 9L "
No Oriole ♂ad s " 4L "
3 Tennessee Warb s " 4L "
Greenish Elaenia 6.2 15L 13/25
Redst ♂ad 7.5 13L 13/12
Stg hd Woodcrpr h 7.5 16R
2 YT Euphonia h, s 8.3 12 16/22
Magpy h 7.3 18R 10/16
L Greenlet h 8.3 16R
Magpy h 8.2 5L Cacao
OB Euphonia 8.3 12L 7/22
Masked Tanager h 8.2 7L
[illegible] h 8.5 10R 2/4 Cacao
" " 8.2 1R
Hooded [illegible] 8.7 9R
Cent[illegible] s 8.1 5R 1/3 Cacao
LB ~~Gnatcatcher~~ [illegible]
B-thr [illegible] h 9.7 8R 0/
Sulph bell Fly h 10.3 1R 14/21

[Swainson's Thrush] 3/4
2 [illegible] Tanager h 11.7 7R Cacao
LBFL h 11.5 10R
YBFL h 10.5 0.9 14/13
" " h 11.2 4R 3/11
Sepia Cap Fly s 11.8 18L 7/11
[illegible] h 11.2 20L
[illegible] Tyrant s 11.6 15R 13/17
Redst h ♂ad 12.4 18L 16/20
" " " 12.2 11R 9/14
[illegible] Manakin ♀ 13.5 8R 1/3 Cacao
LBFL h 15.2 7L
2 Jacamar h 15.6 20R
2 BB Grosbk 15.6 18L
2 Wb Woodcrprs 15.6 17L 4/25
5 [illegible] h 15.8 3L
CSWA s 16.1 12L 18/23
2 OB [illegible] h 15.9 3R ~~15R~~
WB Wood Wren h 15.3 10R
2 Lesser Greenlet h 15.8 5L
[Eared] [illegible] h ♂ad 17.8 6L 1/3 Cacao
[illegible] 16.8 6L
[illegible] 17.1 6L 7/9 [illegible]
L Greenlet h 16.9 20L
LBFL h 17.5 9L 2/3 Cacao
[illegible] h 18.1 1L
YBFL h 18.5 5R
[illegible] s 18.5 1L 24/27
[illegible] h 19.3 8R Cacao
IV [illegible] Woodcrpr h 19.9 14R

Ptly Cloudy -> Cloudy

ACANUAL 30 MAR '92 620 920

Sl Hd Tody Flych h	0.2	8R	1/3
Roadside Hawk s	0.5	17L	21/25
2 Brown Jay	"	"	" chasing
PB Woodpkr h	0.1	5R	8/8
2 Sp br Wren h	0.1	5R	
Wilsons h	0.2	13L	3/3
SHT Fly h	0.4	3L	
Bl Faced Antthrush h	0.9	10L	0/25 Forest Patch
2 O Antb h	0.6	8L	
Sc Rump Tan h	0.7	20R	
Bc Nightin h	0.7	5L	
C Swtch	1.7	7L	
Sl tail Trogon h	2.1	20R	
B Antshrike h	2.3	14L	
W Br Wren h	2.8	5R	
L Hermit s	2.9	3R	
YB Tyrr h	3.1	4L	13/20
Wilsons h	3.6	4L	2/20
YT Euphonia	3.5	1R	15/5
Ovenbird h	3.8	8L	0/6
L Greenlet h	3.9	16L	
RB Grosbk h	4.1	6R	11/13
B Antshrike h	4.7	15R	
RL Honeycreeper s ♂	5.5	17L	8/25
OB Sparrow h	5.8	15R	
Wilsons h	6.3	7L	

Clay Col Robin h 6.6 3R

Bu Wood Warbler s	6.8	7L	8/2
SHT Flyc h	"	3L	0/4
Sulphur Bellied Flyc	7.1	20L	
OB Sparrow h s	7.5	1L	1/3
Wilsons ♂ ad	7.2	16R	7/10
Warbl h	7.2	11R	
2 Sp br Wren	7.6	18R	
2 Sc Rump Tan ♂ ♀	7.8	11L	7/10
2 BF Lat	7.9	13L	7/10
Bl Grosbk h	7.9	13L	
2 Smoky Brown Wdpcker	"	"	h
Sarld hd warbler	7.8	20L	
Black Cowled Orioles	"	"	9/10
R B Spinetail h	7.7	3L	0/3
Blk Cheek Wdpkr h	7.7	17L	Weeh Schn 24/28
2 M Blkbd s	8.1	12R	
B Swift s	8.1	11R	Building
B Antshrike L	7.9	3R	
2 Bl Hooded Parrots	8.2	2L	7/8
OB Sparrow h	8.4	2L	dense cana
2 D Antbird h	8.3	2R	
2 B barred Wren h	8.2	9L	
2 Social Fly h	8.3	15R	
Buff thr Saltr h	8.3	7R	
2 RB Spinetail h	8.3	3R	
R Thr? ♀	8.3	14L	15/21
2 Crimson Col Tan	"	"	3/12
SHT Fly h	8.5	1R	
Sl tail Trogon	8.3	18L	
W wh Tow bd	9.1	13R	
Sc Rump Tan s	9.2	1L	
B Antshrike h	9.3	17L	
2 Bthr Saltr	9.2	11R	

Squirrel eating Cecrop. fruit

YT Oriole h	9.5	16L	
2 Sp br Wren h	10.1	1RL	
Warbl ♀	10.4	5R	3/3
2 Crimson Coll Tan	10.6		

C

W billed dowpch	18.5	18L	
B-gnat h	10.5	17R	
2 D. Antb	10.4	3L	
B. Jay s	12.2	2L	2/13
Crimcoll Tanh	12.2	6L	1/13
2 Bthr Salt	"	"	2/13
Rthr mn	13.4	1L	6/9
2 Sp br Wren h	13.4	12L	
Crims Collar Tanh	"	5L	
→ look up other voice			
2 Lmmeated Wdpkr s	13.4	2L	10/11
Gr Antshrike h	13.5	16L	
W. wing h	14.1	15R	
L. Hermit s	14.2	1L	
Vanrall Cockatr	14.4	1R	7/10
2 R thr Ant Tan h	14.4	17L	
Blk b Salt h	14.6	1R	7/10
B Jay s	15.3	3R	8/10
VERY QUIET			
2 B. Barbet Wren s	16.4	0.0	6/9
Wilson h	16.5	1R	
L. Hermit s	17.2	3R	
2 OW Aut Wren	17.8	2R	3/4
B. Antshrike h	18.1	5R	7
D. Antb. h	"	18R	
YT Euphonia h	18.3	3R	

Orch Oi of chase Tan. Warbler
B&W Warb Y/Y - T

2 Bthr Salt	18.2	0.0	
Ovenbird h	18.6	9R	
LB Gnatwren h	18.5	1R	
Kentucky h, s	19.1	2R	0 5/4
Williams	"	7R	
GB Sparrow h	19.4	18R	
2 S H T the	h	19.5	7L
2 Sp br Wren	s	19.4	6L

Wilsons	8
CSWA	1
Ovenbird	2
RB Grsbk	1
B wingd W	1
Magnolia W	1
B&W W	1
Redstart	2
Kentucky	1
	18

MARKED FOLLOWINGS

30 MAR '82

Mag	Yell	Tarr #
Throat Yell	3	
B/[illegible]	11	

9 APRIL

Mag	Y wtr
BK/O	3
RY/RY	7

Yell Warb chase

31 MARCH

RY/RY	7,8
G/G	9
Blk&W Warb Y/Y	4
B(Thr. Parl?)	4 (9/9)

1 APRIL

BK/O	1

3 APRIL

RY/RY	8
Red Y BW?	8

[illegible] chase by Yell.

6 APR

BK/O	1

8 APR

BK/O	7
RY/RY	8

Cdo Pantanera
30 March
♀ Orchard Oriole ♂/a [illegible] [illegible]

VEGETATION SAMPLING - [illegible]
- YEM ? 31 MAR '92

Unit	Cult	Tg	Ss	Ms	S2°g
0-1 R		100%	20 (boxed)	55 (boxed)	
		(mostly [illegible])			
0-1 L		80	10	10	
		(- & tall herbs)			
1-2 R	100 (Chile)				
1-2 L	100 (Frijole)				
2-3 R	100				
2-3 L		95	5		
		(- & herb/[illegible])			
3-4 R		95	5	+	
3-4 L		95	5		
4-5 R		90	10		+
4-5 L		85	15		+
5-6 R	85	9	6		
	- Maize				
5-6 L	100 (Maize/Chile)				
6-7 R	95 (Maize)		5		
6-7 L	100 (Maize)				
7-8 R	95 (Maize/Chile)		5		
7-8 L	100	" "			
8-9 R	30	70	+		
	- Chile	- herbs			
8-9 L	30	70	+	+	

CHT ♂? [illegible] [illegible] Hawk

♂ + imm ♂ Orch. Oriole, Lona B. Riparian ♀/♂ [illegible]
NrOriole ♂?
+ drinking from fruit that's been torn open

	Cult	Tg	Ss	Ms	S2°g
9-10 R	25	75			
	Maiz/Chile	herb/Tg			
9-10 L	25	75			
10-11 R	85	10	5		
	Maiz/Chile				
10-11 L	90	10			
11-12 R		90	10		
		- herbs/Tg			
11-12 L		90	10		
12-13 R		85	15	+	
		herb/Tg/+			
L		85	15		
13-14 R	50*	50	+		* since [illegible]: Tg
		herbs			
13-14 L		90	10		
		herb/Tg/4			
14-15 R	100*				
14-15 L		95	5		
15-16 R		80	5	15 (P pot)	
L		95	5		
16-17 R		85	10	5	
		herb/Tg			
L	65*	25	10		
17-18 R		90	10		
		Tg/herb			
L		85	10	5	
18-19 R		90	10	5	5
L		Tg/herb			
		90	10		
19-20 R		85	6	6	3
		herb/Tg			
L		40	45	15	

C

Sunny 620-900

MRB PAST EDGE 1 APRIL '92

Catb h	19.7	6R	0.5/4
Catb h	19.7	10L	
RT [illegible] h	19.7	10R	
LT [illegible] s	19.7	4L	
ICB Toucan h	19.8	14L	21/21
[illegible] h, s	18.9	7L	3/6 carry nest [illegible]
LEFL s	18.8	13L	5/9
Catb h	19.1	20R	
Blue [illegible] h	18.8	20R	3/4
Catb h	18.7	9L	
" s	18.5	8R	
YBC h	18.5	15L	
[Swainsons Thr]			
LEFL h	17.2	20L	
Catb h	"	20R	
2 RWNA Tanager	17.1	16R	
OB Euphonia h	16.9	20R	
2 BB[illegible] ♂ ♀	11.5	5L	0.5/
CT h	14.6	11L	
LEFL h	13.8	5L	
TB Seed Finch h ♂	13.6	4R	0.5/2
CT h	14.1	9R	T9
Mag. h	13.7	14R	3/4
2 B+W Sut	13.7	20R	
L. Hermit LEK	12.9	12L	
LEFL h	12.8	3R	

W. [illegible] h ♂	12.7	5R	3/4
LEFL h	12.6	2L	
2 Less Green [illegible] s	10		
2 Sp Br Wrens	1		
2 Clay Col Robins	8	12.1 9R	
2 Catb s	8		
Or Elaenia	9	/14	
M Tanager s	11		
LEFL h Chebek	2		
Catb h	12.2	70L	
BSW Wark ♀	0.5	10L	
Catb s	0.4	20R	
O.C Flyc s	0.6	10L	
WOTH h	0.9	2R	
Rufous Mo[illegible] h	0.8	8R	
Social Fly h	1.1	0.0	16/9
LEFL chebek	0.2	17R	
2 [illegible] Bunt ♂ + ♀	0.8	1L	1/4
BBSA	0.9	7L	
[illegible] Tan h	1.2	10R	1/7
W.E.S ♀	0.5	12L	
RT [illegible]	0.8	3R	
Catb h	1.3	3R	
YBC h	0.7	19R	
" h	0.9	15L	
Catb h	1.6	0R	1/8
2 [illegible] Tan h	1.8	2R	
Little [illegible] s	1.7	1R	
LEFL h	1.6	15L	1/2
[illegible] h ♀ [illegible]	2.1	14R	
LEFL h	2.1	8R	1/9
[illegible] Col Tan h	2.3	6L	
[illegible] Warb h	2.5	9R	
Catb h	3.1	10R	3/8
LEFL s	3.5	2R	4/5
Catb h	3.7	11R	
– look up [illegible]			
LEFL h	4.7	4R	[illegible]

Br. Jays	1.9	3R	9/13
Catbh	4.4	17R	
Bentbill h	"	20R	
Th bill Seed Finch	4.9	10R	
CYT h	4.9	13L	
Redst ♀	5.6	13R	2/5 [illegible]
WCS h	6.1	18L	
2 CYT h	7.5	7R	
LBFL h	7.3	8L	2/9
Redst mo?	7.3	8L	9/9
Canb s	7.6	7L	2/13
CYT h	8.1	2R	4/4
Ruddy Quail-Dove	7.5	17L	
LT Hermit s	8.3	1L	
LBFL h	"	5L	
Br Ht [illegible] s	8.2	11L	3/3
LBFL h	8.7	2L	
Canb s	9.4	6L	
2 Mel Blackb	9.6	10L	
3 Archer [illegible]	9.5	12L	
2 Social Flys	9.6	10L	
2 M Tanager s	9.4	12L	5/6
B [illegible] Saltos	9.5	16L	5/12
WCS s	9.7	20R	
2 Thbil S Finch ♀	9.8	2L	[illegible]
2 S. Am [illegible]	10.3	5L, 17R	
Bl chk wdpkr s	9.9	15R	11/16
Sulph bel Flys			

BBG h	10.2	4L	
LBFL h	9.8	7R	
[illegible]	11.1	9L	
2 [illegible] Finch h	11.9	10L	
[illegible] h	11.9	7L	[illegible]
2 [illegible] s	11.5	8L 3/5	[illegible]
2 [illegible]	11.7	9L	
2 WCS	11.6	10L	
5 BBG	11.9	2L	
2 Th bil S Finch ♀	11.8	5L	2/4
WCS ♀	11.9	2L	
Social Fly s	11.9	10L	22/23
Green [illegible]	11.8	3L	8/13
2 M Titira h	11.9	2L	21/21
[illegible]	"	"	19/21
[illegible]	"	"	18/21

UPLAND ROAD 2 APRIL 1982
Sunny [illegible] 630

[illegible] h	19.5	20L	9/5
4 [illegible] h	19.6	"	
[illegible] Tanager	"	"	
BT S Tanager h	19.3	16R	
[illegible]	18.8	14R	
B [illegible] h	18.5	17R	
B [illegible] h	18.7	13R	23/8
[illegible] Flatbills	18.7	19R	14/23
[illegible] h	18.5	16L	[illegible]
[illegible] s	17.2	1R	2/2
2 R Bill [illegible] h	17.8	15L	
[illegible] h	18.3	16R	
2 [illegible] Tanager h	17.4	5R	[illegible]
Mag [illegible] h	18.[illegible]	[illegible]	
[illegible]	17.6	18L	4/23
2 GC Wr [illegible] h	18.4	16R	
[illegible] Flatbills	17.4	0.0	10/15
Hook bill [illegible]	17.3	3L	23/[illegible]
[illegible] s	"	5L	[illegible]
4 [illegible] h	17.5	17R	[illegible]
2 [illegible] h s	16.9	14R	
2 [illegible]	15.8	11L	[illegible]

C

	RCAT anager h	15.5	6R	1/6 [illegible]
	BBGrosbk h	15.1	18R	
	WOTH s	15.4	1R	5/9 [illegible]
	Bl Ch Wdpkr h	15.2	11L	
	L Hermit h	15.3	1L	
	Sp br [illegible] h	14.5	20R	
	B [illegible] h	14.5	18R	
	O B [illegible] l	14.6	8R	17/20
	W bill [illegible] h	14.3	20L	
	Kentucky h	14.3	12L	1/18
2	RB Grosbk h	14.4	14L	
	Orange bill Sparrow	14.4	5L	8/3
2	BB Grsbk h s	14.3	7L	1/14
	N Royal Flyc h	14.2	16R	
2	GC Warbler h	13.9	7R	6/19
4	Mt A Tanager s	13.4	2R	2/20
2	[illegible] Flatbill s	13.2	2L	
	W [illegible] h	13.3	13L	
	[illegible] ? sp	13.3	10L	
	Sepia Cap Fly h	12.9	7R	9/29
	WB Wdcrpr h	12.6	17L	
	RC Manakin h	11.6	20L	
2	W [illegible]	10.9	16R	
	[illegible] Flyc h	10.8	18L	
	[illegible] h	10.6	18L	
2	[illegible] A Tan h	10.6	20L	
	Swainson's Thr S	10.4	7L	3/9

	[illegible] h	10.4	10L	
2	RCAT Tanager h	10.3	17L	
	WOTH s	10.3	15L	
	Smoky br Wdpkr h	10.5	16L	
	W [illegible] h	9.6	7L	
	L Greenlet h	10.1	16R	
	Sp br [illegible] h	9.7	6R	
	W [illegible] h	9.5	6R	
	RCAT Tanager s	8.9	16R	7/[illegible]
	L [illegible] h	9.2	9R	
	h	7.6	6R	7/23
	TC Greenlet h	7.5	12R	
	RCAT Tanager h	7.4	21R	
	W [illegible] h	7.2	20L	
	CACADAS	8.30		
	Violaceous Trogon	6.3	17R	
	[illegible] h	4.4	16L	
	W [illegible] s	4.5	8R	2/[illegible]
	S-billed Pigeon h	4.2	6L	
	WC Manakin s	3.7	1L	28/[illegible]
	L Hermit h	3.1	1R	
	[illegible] s h	2.8	3R	2/11
2	[illegible] h	1.5	12L	
	[illegible] h	1.4	20R	
	BBGr h	1.1	15L	
	[illegible] h	0.7	15R	
	[illegible] h	0.5	18L	
	WC Manakin s	0.5	7R	
	[illegible] h	0.9	17L	
	L Greenlet h	0.5	16R	
	W bill Wdcrpr	0.5	17R	

C

Sunny/fog-rain 60s
After hard p.m. rain 90

CHCRO 3 APRIL '92

W Bu W. en h	19.6	1[illegible]L	
WOTH h	19.7	8R	0/4
Wilsona h	19.8	16R	3/4 Cacao
Oche [illegible] h	19.5	18L	
Sp br Wren h	19.6	10L	
Magn h	19.7	10L	
[B.W. Rettes]			
YO Fly h	18.2	16L	
B B[illegible] h	19.1	5R	
V W Tanager h	18.7	9L	20/30
BW Parrot h	18.5	16R	12/12
Tennessee Warblers	18.5	14R	26/52
Lesser [illegible] S	"	14R	"
Redstart h	18.7	7R	
" ♀	17.9	14L	15/23
BT NW S ♀	17.7	13L	28/22
Magn [illegible]	17.6	7L	5/9
[illegible]	17.2	20R	
Red lored Parrots	17.2	16R	21/24
Green [illegible]	16.7	19L	9/14
Sepia Cap Fly L	"	17L	
Magn L	16.5	15L	
W C [illegible] h	16.7	18L	
L [illegible] S	16.7	3L	
Redst ♀	16.7	5L	8/9
CSWA S	16.7	9L	13/14

Ochre bell Flyc S	16.7	9L	10/14
[illegible]	16.5	[illegible]	9/13
Golden Col Robin h	16.1	18R	
L Greenlet h	15.9	8R	
2 [illegible] Seedeater h	15.9	15R	
[illegible] Greenlet h	15.8	3L	0/20
M Blackb h	16.1	5R	23/28
W Bu W S	"	2R	
[illegible] h	14.8	16R	
[illegible] h	14.8	10R	
Wilsona h	14.6	10R	3/4 Cac
M [illegible] S			
[illegible] h			
R [illegible] S			
2 Viol Trogons			
[illegible] S	14.6	14L	9/19
[illegible] h	14.5	1[illegible]	
Y[illegible] Vireo h	14.[illegible]	[illegible]	32/24
WO [illegible] h	14.3	10L	
[illegible]			
[illegible] S	13.9	20L	
[illegible] Greenlet S	13.8	8L	19/25
Redst [illegible]	13.[illegible]	[illegible]	13/14
Swainson Thrush	11.9	20R	
[illegible] Col [illegible] h	12.7	4R	23/26
3 [illegible]	12.6	9R	21/28
Wilsona h	12.2	10R	Cacao
Swainson Thrush	11.8	9R	9/13
→ group (1 least 3)			
WOTH h	11.5	10L	
Magn [illegible]	11.7	2L	13/28
YT [illegible]	"		
Redst h	11.8	2R	
[illegible] h	11.3	18L	
[illegible] S	11.3	1[illegible]	
	.4		
[illegible] Thrush S			
[illegible]			
[illegible]			
[illegible] h	11.1	12L	
[illegible] Col Robs	11.3	17R	

Magn. h	10.2	1L	
2 N. Oriole h [illegible]	10.1	2R	17/12
BB Pkt h	10.1	7R	15/8
YBPK h	10.1	14R	6/8
2M Tanager s	10.1	18R	
Woodcock h	9.8	6R	1/3 Car
B.Thr Bot Gl h	9.8	7R	
2 Rubin Ant Tan h	9.7	5R	
Swainson's Th s	8.3	20R	8/14
Lesser Greenlet h	7.4	18R	
YO Flyc h	8.3	5L	
Redstart h	6.25	6R	
S T A ?	6.9	6R	16/27
Slaty/tail Trogon h	6.2	11L	17/[illegible]
2 B Barred Wren h	5.9	5L	11/27
Wood Wrenlet h/s	5.7	10L	16/28
Scaled Woodpecker	5.7	8R	
Magn h	2.5	18R	
Sulph-bill Fly h	3.5	16L	
B. T[illegible]S h	3.4	7L	7/23
N Waterthrush	2.2	11L	0/3
Trop Pewee h	1.8	15L	
Green Elaenia	1.7	14L	
Wilsons Warbler h	1.4	8R	Caw
	1.1	13L	1/3
Magnolia / Wilson h	0.4	3R	
~~Cath~~ h	0.5	7R	
Swainson's Thrush s		edge	1/2

Cath h	0.3	6R	edge
LEFL h	0.1	9R	n/pa

ACHIUAL 4 APR 92 6:10-9:10

After Rain Overcast

D. Antbird h	19.8	18L	
Spot Wren h	19.8	1R	1/4 Caw
Wilson's h	19.7	7R	
B[illegible] h	19.[illegible]	7L	
Y Breast Grosbeak h	19.6	13L	10/12
2 B[illegible] Wren h	19.5	20L	
2B Antshrike h/s	19.5	17L	8/13
GB Spinetail	19.2	4R	
S[illegible] Tody Fly h	19	10L	
CB [illegible] h	19.1	15L	
~~[illegible]~~	18.7	17L	
2 B[illegible] h	18.8	6R	
2 S[illegible] T Fly h	18.6	1L	1/4
Redstart h	18.[illegible]	1R	
[illegible] Wren h	18.4	4L	
2 YB Cacique	18.7	19R	
W. Olivaceous h	18.6	20R	
2 S. [illegible] h	18.5	6R	
2 Ovenbird h	18.3	8L	0/5
Long-bill Gnatwren h	18.5	3L	1/5
GB Spinetail h	18.2	12R	
Wilson's h	17.9	1R	
Spadebill h	17.[illegible]	8R	
B.Thr [illegible] h	17.8	7L	
[illegible] h	17.8	10R	
2 [illegible] h	17.6	9R	
[illegible] Woodcreeper h	17.4	12L	
YW Tanager h	17.4	17L	2/[illegible]
2 YB Cacique s	17.[illegible]	2L	2/4
[illegible] s	[illegible]		
[illegible] h	16.8	1R	4/4
Wilson's s	16.5	6L	4/9
Redstart	16.4	7R	4/11
2 S[illegible] Tody Fly h	16.3	5R	
D. Antbird h	15.[illegible]	3L	
2 YB Cacique h	15.9	4R	
2 B[illegible] Saltator h	15.9	18R	7/9
B Antshrike h	15.1	6L	

Com. Bread h	14.2	12R	
Vi. Euphonia h	14.2	6R	
GR Sparrow h	14.8	18L	
Bl. Jay s	15.1	3R	7/4
L. [illegible] s	14.8	R	
3 BW Salt	14.5	9R	7/10
[illegible] h	14.7	10L	
3 Chachalaca s	14.4	11L	8/9
Ovenbird h	14.8	2L	1/10
Spadebill h	14.2	5R	
OB Sparrow h	14.1	5L	
2 Sp. br. Wren h	13.9	10R	
Sh. b. A. Woodpeck h	14.3	5L	
Aguila h	14.5	9R	
GB Sparrow h	13.9	12L	
[illegible] h	13.3	10L	
2 Lineated Wdpkr s	13.8	0 0	7/R.
Smoky brown " h	13.9	8L	
P. Billed Wdpk h s	13.7	10L	
Bl. face Antbird h	13.3	6L	
2 W bill Wdcrpr h	"	7L	"
B Antshrike h	13.4	20R	
[illegible] h	12.4	1R	
[illegible] s	12.4	18R	
Yellow W[illegible]	12.8	19R	9/1
2 D Antbird h	12.9	20R	
[Plumb Kite - building nest]			

2 GR Sparrows	12.2	4L	4/12
[illegible] s	12.3	R	
[illegible] Wren h	11.7	6R	
[illegible] s	11.6	3R	11/14
R. [illegible] h	11.6	3R	
[illegible]	11.6	12L	11/14
[illegible] Col. Tou s	11.6	20R	1/2
2 Manakin h	11.5	4L	
W[illegible]	"	R	
[illegible] s	11.6	2R	10/4
[illegible] Woodpeck	11.5	20L	
2 GR Sparrow h	11.4	1L	
[illegible] h	11.5	15L	
[illegible] s	10.8		
4 [illegible] s	10.7	15L	
[illegible] s	10.8	18L	Bus
[illegible] Wren	10.7	6R	Can
2 W. [illegible] Trogon s	10.8	16L	
[illegible] s	10.8	18L	Bus
[illegible]	10.6	5L	Can
[illegible] Seed h	10.6	7R	4/4
[illegible] bell Fly s	10.8	10L	Bus
[illegible]	9.8	15R	
R. [illegible] s	9.2	16R	7/11
[illegible] h	9.4	2R	9/2
[illegible]	8.[illegible]	[illegible]	
2 [illegible] Tanager s	8.7	18L	13/22
[illegible] h	8.9	3R	
[illegible] bell Fly h s	7.8	20L	1/9
[illegible] Fly h	7.2	2R	
3 M[illegible] s	7.3	19L	1/2
[illegible] Oriole h	6.8	17R	
[illegible] s	6.3	6L	9/13
[illegible] Fly h	6.8	3L	1/3
L. [illegible] s	6.7	5L	
D. C. [illegible] h	6.8	19L	
[illegible]	6.8	2R	6/10
[illegible] h	[illegible]	18L	
[illegible] h	5.6	13L	

Sun/Fog → Sunny Clouds 620 ~~850~~ 910

hAt Flych	5.7	5L Cam
2 DWA Nym	5.2	20L Ver
B Jay Sh	4.8	5R Cay
D Anhbird h	4.8	9L
Magpy h	4.2	4R 12/5
GB Sparrow h	4.2	20R
LEFL s	4.4	20R 4/
Hooded ♂ s	3.8	1L 2/21
2 OB Sparrow h	3.6	2L
Robin ♂ ad	3.6	2L 8/
2 YB Cacique h	3.7	14L
L Green let h	3.4	10L
2 RCA Tanager h	3.4	14L
CSWAh	3.4	6L 8/
Sun br Wdpkr h	3.1	2L
Wilsons h	2.7	15L
2 PB Wdpkr h drum	2.5	5L
L. Idem [illegible] s	2.4	1R
Sulph bell Flyc h	1.7	13R
Ken Ant [illegible] h	1.6	11R 9/3
Wd bil Wdcrpr h	1.5	10L
LT Hermit s	1.4	1L
3 Br Jay h	1.2	16L
Cinn Becard h	0.6	8L
Wilsons h	0.3	18L

ABC FIRST EDGE

[illegible] h ad	11.8	3L	15/16
[illegible] h	"	10L	
Clay Col Robin h	"	17L	
[illegible]	11.7	1L	
Br Cap Flyc h	11.3	14L	
2 BBG s	11.7	2L	
2 Chat h	11.6	18L	
Masked Tanager	11.3	8L	7/7
2 Bu [illegible] h	11.8	14L	
2 Orch Oriole [illegible]	11.?	18R	3/3
2 " h	11.3	12L	
Sulph bell Flyc h	11.2	5L	9/9
2 Sc Rump Tan h	"		
2 Ruddy Grd Dove	11.2	4L	3/5
Rose br Grsbk	"	"	"
Th bil S Finch h	11.1	5L	
2 WCD h	10.9	5L	
BGG s	10.5	16L	
Magpy h ~~[illegible]~~	9.7	20L	
GB Sparrow h	9.5	2L	
UOFL h	9.5	7R	
h	9.3	15L	
CMT h Singing	9.5	7R	
Casio	9.?	20L	
Sp br Wren h	9.5	18L	
Chat h	9.1	8L	
YBFL h	9.2	17L	
2 Sc Rump Tan	9.1	20R	
Yellow Warb	9.2	14L	12/13
LEFL h	8.9	3L	
Wh bell Emerald	9.2	12L	
10 Orch Oriole s h	8.9	14L	
Clay Col Rob h	9.3	4L	9/10
Casio s	9.7	12L	2/10
Bl Cr Wdpkr s	9.1	20L	
Sc Rump Tan s	8.5	15L	3/4
LEFL h	7.8	15L	
Casio h	8.1	4L	

Redstart [illegible] ♂	8.1	11L	4/9
Bu Yard Tom s	7.8	0.0	
Waterthrush s	7.7	0.0	
Buddy Crake h	7.8	8R	
2 SC Rosin Tan ♂	7.3	5L	3/3
Catbird h	7.5	5R	
UEFL h	6.1	8L	
ChAs S	6.3	20R	quite visible [illegible]
Violet Sabrewing	5.8	5L	
BRGrs	5.5	10R	
Little Hermit s	4.9	1R	0-3/8
RT Hummingb h	4.7	12R	
RTA Tanager h	4.6	15R	
13 [illegible] s	4.3	9L	4/4
2 Catbird h	4.1	6R	
UEFL h	4.7	5R	
Gray Col Tan h	4.5	5R	
Wrenn h	3.8	7L	
Redstart ♀	3.9	8R	7/7
Ovenbird S	3.6	2L	1/6
Chat h	3.4	9L	Dense Stat.
UEFL h	2.6	10L	
2 Sp br Wren h	2.1	11R	
SCTA Tan ♂	1.7	6L	2/2 Sun
Carib s	1.8	1L	
5 Orch Oriole s	1.2	3R	8/25
3NC Bunt ♂ s	1.4	9R	6/7

Or Or } Lean, Gd Plumage 19/8 14-26
No " }

Lit A Tan	1.3	12R	2/7
UEFL h	1.2	6R	
Bl Ch Warbler	1.2	15R	
2 Catbird	1.3	19R	14/18 ST
Rose br Grosbk ♀	"	"	
ChAs h	0.9	8L	
S. TA ♂			
" ♂ juv			
2 Rs br Grsbk ♂			
2 BRGs	0.7	3L	
Blu Oriole h	0.9	15R	
Clay Colo Robin	1.1	15R	
UEFL	0.8	11R	
RC Manakin h	0.8	10L	
Carib S	0.8	11R	3/8
Bl Ch Warbler	0.8	11L	9/13 Sm
Prairie Pw s	12.1	13R	12/15
3 NG Oriole S	12.2	13R	14/15

8.00 CICADAS

2 Sp br Wren h	17.3	15R	
Catbird h	13.6	20L	
"	13.8	7L	1/7
Ind Bunt ♂	15.[illegible]	10L	
RT Hum s	16.8	9R	
2 Tropical Tan s	18.8	19L	5/18
L. Hermit S	19.1	2R	

C

Overcast
Muggy!

600 - 650
Happy BD Mom

UPLAND FOREST 7 APRIL '92

OB Sparrow h	0.1	20L	
WB Wood-wren h	0.2	17R	
" "	0.1	8R	
Heigh red eyed vireo song - shower 0.2		7R	2/
"not Solitary"			
D. Antbird h	0.3	11R	
WOTh h	0.4	15R	singing
" "	0.6	20L	
Spot breast wren h	0.1	18L	
Kentucky W h	0.2	20R	Gap
B quail h	0.6	9R	17/20
Sul br woodpecker h	0.6	17R	
2 D. Antbird	1.2	22R	1/4
YB Cacique h	1.1	10R	
2 BH Saltator h	1.5	6L	
2 Rose thr Becard	1.7	18R	7/1 Gap
2 Great Curassow	1.9	8, 20R	4/14
Sepia Cap Fly h	1.8	10R	
L. Hermit h	2.9	1L	
2 BB Grosbk h	2.7	17L	
4 Ph thr A Tanager h	3.4	10L	
2 GC Warbler h	3.2	8R	3/35
D.C. Flyc h	3.9	6L	10/32
W bill Woodcr h	3.7	20L	
Sep Cap Fly h	4.3	13R	1/12
L Greenlet h	4.1	3R	9/28

WB Wren h	4.7	12R	
OB Sparrow h	4.2	4L	
R[illegible] h	4.3	7R	3/11
2 R[illegible] A Tanager h	4.5	20R	
Attila	4.9	15L	Gap
T C Greenlet h	4.5	20R	
[illegible]	4.9	13R	8/10
[illegible] h	5.3	8L	
Bl faced Antthrush	5.4	15R	
2 [illegible]	5.8	14L	
L Greenlet h	5.6	2L	20/27
B [illegible] h	6.2	20R	25/33
Sep Cap Fly s	6.5	2L	2/12
[illegible] h	6.4	6R	29/35
[illegible] h	7.2	10R	3/22
RC Manakin h	7.3	11R	
L [illegible] h		3L	
Ochre bel Fly s	7.1	5R	8/
[illegible]			/25
[illegible] h	8.1	8L	30/30
[illegible] Woodcr h	8.4	20R	
[illegible] h	9	11L	
[illegible]			
WOTh h	9.4	7R	
2 Aracari h	9.3	5L	20/20
L [illegible] s	9.5	1R	3/5 sh
Sulphur rump Fly	10.2	5R	
[illegible]	10.1	11R	Gap
RC Manakin h	10	5R	
BC Warbler h	10.6	5L	20/
2 RC A Tanager s	10.4	11L	1/
3 BB Wren h	10.3	10L	
[illegible]	10.5	1L	13/22
[illegible]	10.7	17R	
Sepia Cap Fly h	10.9	15L	
[illegible] h	10.8	3R	
[illegible]	10.9	3L	17/18
2 D. Antb h	11.0	5L	
[illegible] h	11.1	7R	
Orangebird h	11.2	15L	

L.T. [illegible]	11.3	0.0	
Wilsons h	11.3	14L	3/11
YBFL h	11.5	16R	Grp
Gr Cr Flyc h	13.1	2L	25/25
Bl whr Sh Tan h	13.5	20L	
2T C Greenlet	13.7	6R	5/[illegible]
2BR Grosbk	13.7	6R	15/[illegible]
Bl th Fol [illegible] h	14.2	12L	1/6 [illegible]
2 DWA Nun h	14.6	10L	
Kentucky h	14.7	3L	1/3 [illegible]
WB Wren h	14.7	20L	
Redstrt h	14.3	8R	
Attilam	14.6	20L	
2 Kentucky	14.8	17L	
Ruf A Tan h	15.1	20R	
2 T C Greenlet h	15.3	3L	6/22
Castaud S	15.5	5L	5/[illegible]
2 YR Toucan h	15.7	10R	30/30
Kentucky L	16.3	20L	
Double tooth Kite	16.9	18L	25/2[illegible]
Wilsons h	"	10L	2/29
Mug j h	17.5	4R	
Eye ring Flat b s	18.2	1L	3/[illegible]
WBW Wren h	18.1	10L	
2 Sp br Wren s	18.3	1R	4/[illegible]
Wo At h	18.5	15L	
M T Sh Tan h	18.5	10R	

Yenoosh	18.4	18L	
2 Ch Woodcreeper h	19.2	5L	
L [illegible] h	18.8	10R	
YO Flyc h	18.9	8R	11/35

15FL Fly 0.4 → 0.5 – 5
[illegible] 8.7 → 0.5 – 7 → 0.6.5

6:10 – 8:05 Breezy

ACRCO 8 APRIL 92			Heavy Sun [illegible]
Sp [illegible] Tan h	0.1	6R	8/13 [illegible]
Wo A h	0.3	7R	[illegible]
WBFL s	0.4	0.0	8/10
Bl whr Sa Ato h	0.3	17L	
Ca Ma s	0.2	5R	3/5
[illegible] h	1.1	1R	32/33
WBFL s [illegible] / Wilsons s	1.1	0.0	32/33
BSA h	0.8	15R	[illegible]
[illegible] Flyc ?	0.0	0.0	10/13
Bl Ch [illegible] h	1.1	9L	
B-back Wren h	1.2	3L	
3 Bl hd Saltr h	1.1	5L	
2 Sp br Wren	1.3	11R	
S[illegible] Flyc h	0.8	10L	
Y[illegible] Wa h	0.7	10R	
Br Jay h	1.4	8L	10/12
YBFL h	1.3	20L	
Mug j h	1.3	11L	
" " "	"	16R	
Str hd Woodcreeper h	2.1	11L	
Sh bl Pigeon s	2.3	14R	[illegible]
2 [illegible]			
WA [illegible] h	3.3	15L	
Redstrt h	3.3	15R	
Mu [illegible] h	3.2	7L	
L [illegible]	3.5	10R	[illegible]/32
Bl hd Saltr h	3.6	1L	
Br Jay S	3.7	1R	22/26
[illegible] h single	4.7	15R	

2 Sulph bell Flyc s	5 5	8R	13/20
2 W Bulcrpt h	5.3	10R	
Bl Chk Wdpkr h	5.7	14L	
3 Orch Oriole (1 imm ♂, 2 ♀)	6.2	16R	21/28
LT Hermit s	5.8	11L	
Rchst ♀	6.4	20R	9/12
" ♂ ad	7.4	10R	9/14
2 M Tityra h nest	8.1	9L	
No Oriole ♂ ad	8.2	6L	26/28
Sw A[illegible]	8.1	12L	21/28
Rufus tail Jacamar	8.9	20R	
" " "	10.4	5R	
M Blackb h	10.2	16R	15/20
YBEL h	10.7	8R	12/28
RC Manakin h	10.7	6R	
" "	11.3	8L	

CICADAS 8:00 B 12

YO Flyc h	11.1	17R	
Red lored Parrots	13.8	13L	14/21
2 KB Toucan s	14.2	17L	9/13
RC Manakin h	14.8	10L	
LT Hermit LEK h	15.4	8R	
Orange bill Sparrow h	15.7	16R	
Lesser Greenlet h	16.4	20L	
[illegible] h	17.2	10R	
B-H Tody Flyc h	17.3	7L	9/11

Sulf bellied Flyc s	17.5	9L	11/11
~~DARK [illegible]~~	9.7	4L	3/[illegible]

9 APRIL [illegible] 6:20 - 9:15

[illegible] ♂ h	0.1	6R	
B[illegible] Sulf h	0.2	13R	
Woodcreeper	0.2	6R	1/3
2 Bl Chk Wdpkr h	0.4	17R	
Great Tityra s	0.7	16L	22/23
[illegible] ♂ [illegible]	0.5	13R	
Gr [illegible] h	0.4	20L	
S[illegible] Flyc h	0.6	7R	
[illegible] h	0.8	10L	
[illegible]	1.2	3L	1/12
2 W bell [illegible] s	1.3	11L	2/6
[illegible] Ant Tan h	1.4	2L	3/20
[illegible] h	1.5	15L	13/24
[illegible] Wdpkr h	1.2	12L	
LT Hermit h	1.7	0.0	
Clay Col Robin h	1.7	6L	
[illegible] Emeralds	1.5	5R	3/5
2 Bl [illegible] h	1.6	13R	
2 D[illegible] h	2.2	5L	
~~(Greenlet)~~			
KB Toucan	2.6	17L	15/31
[illegible]	3.	5L	
[illegible] Wallah h	3.3	3L	5/14
[illegible]	3.5	8R	
[illegible] Gnatcatcher h	3.6	8L	10/23
[illegible] h	3.6	6L	
2 h [illegible] Ant Tan	3.7	18L	
(SGNA's)	4.3	5L	9/13
2 N [illegible]	4.1	3R	
[illegible] Sparrow h	4.1	3L	

L. Hermit s	4.5	3L	
4 OWA Wren h	4.9	9L	
Ovenbird h	5.4	3R	1/3
Bbw Salt h	6.3	9R	
Wilson's s	6.4	13R	10/1
SHT Fly h	6.7	6R	
" "	7.1	9R	
2			
Variable Seedeater	7.2	8L	
LB Gnatwren h	7.3	12R	
YB Cacique s	7.5	10R	2/4 Cam
Stub Wd Creeper h	7.3	13R	
Spot breast h	7.1	7R	
Green Coll Tan h	7.9	20R	
2 RTA Tan	8.2	10R	
Wilson's h	8.1	6R	
B. Antshrike h	8.2	17R	
GB Sparrow h	8.5	15R	
YB Cacique h	8.5	11L	Cam
2 B [illegible] Salt h	8.4	10R	9/2
Social Fly ch	8.9	10R	
Var Seedeater h	9.2	5R	Cam
B quit h	8.7	15L	
2 D. Ant h	9.4	5R	Cam
B quit	9.4	8R	6/10
W[illegible] Warb s	9.6	12R	10/10
2 W. Tanager s	"	"	12/3
Bbw Salt h	10.1	3L	

Spot br Wren h	10.3	15L	
2 " " "	9.9	7L	
Grey Salt h s	10.4	2L	10/
Yel Tyrannulet s	10.5	10L	4/5
S[illegible]TA Wren s	10.5	18L	10/18
2 S B Fly			
Chestn SB Fly			
BB Fly			
GB Sparrow h	10.7	20L	
2 B Antshrike	11.4	8R	
2 M. Blackbird h s	11.5	5R	
GB Sparrow h	11.4	[illegible]	
2 Si Flame Tan			10/3
No Chestnut			
2 Hooded [illegible]			
Wilson's s	11.8	3L	2/2
GB Sparrow h	"	1R	
[illegible] Euphonia	12.5	10L	12/23
Sp br Wren h	"	20L	
S. Rump Tan s	12.8	1L	4/7
3 Bbw Salt h	13.1	10L	
Wilson's	12.8	5L	4/5
GC Antshrike h	12.8	14L	
Chachalaca s	12.8	1L	2/3
Var Seedeater h	12.7	8R	Cam
2 Antbird	12.7	6L	
GB Sparrow h	13.2	12L	
B Salt h	13.2	15L	
2 Variable Seed	13.5	8L	3/10
Tropical Pewee h	13.8	15L	
Sp br Wren h	13.9	12L	
Red Bill Pigeon h	13.6	8L	1/5
Redstart	14.3	[illegible]	
2 [illegible] s	14.3	11L	
Mannikin	14.2	16R	
SHT Fly	14.8	1R	10/1
Tawny Wren s	14.7	1R	
[illegible]	14.7	[illegible]	
S B Wren h		11R	

C

Wilson s	14	7	14L	10'
4 BOL h	14	9	10R	
10 Flyck	14	6	2R	
2 1B Carcagno h	15	4	2L	
2 B Dragan h	15	7	18R	
LB Bushman h	16	6	6L	
Wilson h	16	7	18R	
WB Wdrop h	16	8	5R	
2 S [illegible] F [illegible]	16	9	5L	
2 S [illegible] Wdrop	18	1	17L	
Wilson s	18	3	1R	2/2
Von Siebeaten h	19	2	9R	[illegible]
B [illegible] h	19	4	17L	8/12
3 DNA Wilson s	19	8	8L	

FOLIAGE HEIGHT PROFILE
2° FOREST CHAIUL 91-92

(22 points / 1100 meters)

0	+	200	1,2,5,9,13	550	0.5,6	760	-,2,8,15	VINES	GAPS
	+		0.5,2,3		-,1,5,7,8,12,14		1,9,11	0-1 R -	60
	-,2,3,10		0.5,2,5,6		-,11,12,14		+,3,9	L -	50
	1,3		0.5,12		1,5,6,9,11,13		-,7,12	1-2 R -	15
	1,2,15	250	0.5,4	600	1,9,10	800	+,4,5,9	L I-	35
50	0.5,11		1,8,13		-,2,4,5,14		-,4,8,12	2-3 R -	30
	1,2,4,8		+,9		-,6,9,11		-,2,8	L -	-
	-,7,9		1,2,7,8		1,3,8		1,4,7	3-4 R -	10
	1,7,9		1,4,10		+,10,12		+	L I-	35
	0.5,4	300	1,3,4,10,12	650	1,7,12	850	-,2,4,15	4-5 R -	30
100	0.5,6		1,2,3,6,9,10,14		-,1,2,7,8,13		1,4-6	L I-	40
	0.5,2,10		1,9,14		0.5,9,12		1,5	5-6 R -	-
	-,10,11,22		1,2,10,12		+,6,8,9		+,2,8,13	L -	10
	-,3,7,10,20		1,2,4,9,10,11		0.5,11,13		0.5,2,7-10	6-7 R -	5
	0.5,3	400	0.5,1,3,11,12,15	650	+,8,11	900	-,5,6,7	L -	20
150	0.5,2		1,10,11		+,4,9,21		-,7,8,11	7-8 R I-	25
	0.5,6		-,14		1,4,7,10,15		-,5,17	L I-	25
	0.5,7,13		-,2,9,11-17		+,4,6,20		-,8,12	8-9 R I-	15
	0.5,3,4,11,17		-,2		+,3,5,8		0.5,13	L I-	5
	-,2,3	450	-,3,4,8,14	700	1,3	950	0.5,9	9-10 R I-	50
200	+,3		1,5,8,27		+,4,7,10,14		0.5,7,12	L I-	5
	0.5,2		+,13		0.5,5,10,11		+,7,8,18	10-11 R I-	50
	1,9,16		0.5,14		+,3,10,12		-,7,9	L 3-	-
	1,2,9		1,2,4,10,18		+,4,7,10		0.5,2,7-9	11-12 R 2-	45
	0.5,14	500	0.5,2,9	750	+,5,10	1000	1,8,9	L 2-	-
250	1,3,4						-,8,12,13	12-13 R -	-
							1,3,11,12	L -	-
							1,14,15	13-14 R -	-
							+,8-12	L -	-
							+,7,12,13	14-15 R -	10
							+,8,10-13	L I-	-
							+,5,8	15-16 R I-	-
							1,3,5,6,9	L -	-
							-,2,6-8	16-17 R 2-	10
						1100	-,3,7-13,	L 3-	35
								17-18 R 2-	15
								L 3+	-
								18-19 R +	-
								L -	5
								19-20 R I-	-
								L 2-	5
								20-21 R 2-	-
								L 3-	-
								21-22 R 4-	L 4-

-90 cover / transect unit

21-22 R 10
L 40

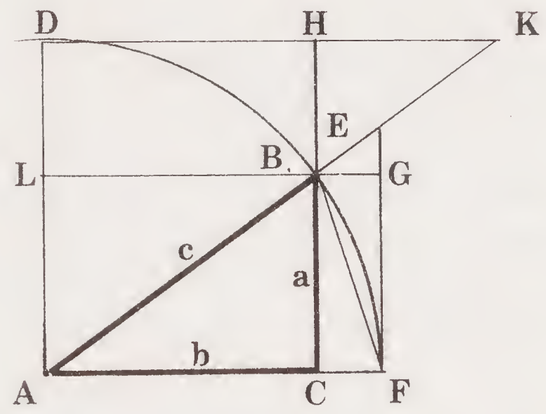
C

FUNCIONES TRIGONOMETRICAS

Sea el ángulo BAC (Fig. 1) = A = arco BF, y el radio AB = AF = AD = 1.

Entonces:

sen	A = BC
cos	A = AC
tg	A = FE
cot	A = DK
sec	A = AE
cosec	A = AK
senver	A = CF
cosvers	A = LD
exsec	A = BE
coexsec	A = BK
cuerda	A = BF



(En el triángulo recto) ABC (Fig. 1), sea el ángulo BAC = A, ABC y ACB = C = 90°. Haga el lado BC = a, AC = B y AB = c.

Entonces tenemos que:

1.-sen $A = \frac{a}{c} = \cos B$

2.-sen $B = \frac{b}{c} = \cos A$

3.-tg $A = \frac{a}{b} = \cot B$

4.-tg $B = \frac{b}{a} = \cot A$

5.-sec $A = \frac{c}{b} = \text{cosec } B$

6.-sec $B = \frac{c}{a} = \text{cosec } A$

7.-senver $A = \frac{c-b}{c} = \text{cosver } B$

8.-senver $B = \frac{c-a}{c} = \text{cosver } A$

9.-exsec $A = \frac{c-b}{b} = \text{coexsec } B$

10.-exsec $B = \frac{c-a}{a} = \text{coexsec } A$

11.- $a = c \operatorname{sen} A = c \cos B = b \operatorname{tg} A = b \cot B = \sqrt{c^2 - b^2} = \sqrt{(c+b)(c-b)}$

12.- $b = c \cos A = c \operatorname{sen} B = a \cot A = a \operatorname{tg} B = \sqrt{(c+a)(c-a)}$

13.- $c = \frac{a}{\operatorname{sen} A} = \frac{a}{\cos B} = \frac{b}{\cos A} = \frac{b}{\operatorname{sen} B} = \sqrt{a^2 + b^2}$

14. $\operatorname{sen} A = \frac{1}{\text{cosec } A} = \operatorname{tg} A \cos A$; $\therefore \cos A = \frac{1}{\sec A} = \cot A \operatorname{sen} A$

15. $\operatorname{tg} A = \frac{\operatorname{sen} A}{\cos A} = \frac{1}{\cot A}$; $\therefore \cot A = \frac{\cos A}{\operatorname{sen} A} = \frac{1}{\operatorname{tg} A}$

16. $\text{senver} A = 1 - \cos A = \operatorname{sen} A \operatorname{tg} \frac{1}{2} A = 2\operatorname{sen}^2 (\frac{1}{2} A)$

17. $\sec A = \frac{1}{\cos A} = \sqrt{1 + \operatorname{tg}^2 A}$; $\therefore \text{cosec} A = \frac{1}{\operatorname{sen} A} = \sqrt{1 + \cot^2 A}$

18. $\text{exsec} A = \sec A - 1 = \operatorname{tg} A \operatorname{tg} \frac{1}{2} A = \frac{\text{senver } A}{\cos A}$

FORMULAS DE LA CURVA

Caso 1. Cuando D representa el ángulo correspondiente a una cuerda de 20 m.

19. $R = \frac{10}{\operatorname{sen}(D/2)}$; $\therefore \operatorname{sen}(D/2) = \frac{10}{R}$

Caso 2. Cuando D representa el ángulo correspondiente a dos cuerdas consecutivas de 10 m cada una.

20. $R = \frac{5}{\operatorname{sen}(D/4)}$; $\therefore \operatorname{sen}(D/4) = \frac{5}{R}$

21. Longitud de la curva $L = 20\frac{I}{D}$ (para R»100 mts)

22. Angulo intersectado $I = \frac{DL}{20}$

23. Grado de la curva $D = 20\frac{I}{L}$

24. Tamaño de la tangente $T = R\operatorname{tg}(I/2)$

25. Cuerda del arco $C = 2R\operatorname{sen}(I/2)$

26. Ordenada media $M = R\,\text{senver}(I/2)$

27. Externa $E = R\,\text{exsec}(I/2)$

28. Radio $R = T\cot(I/2)$

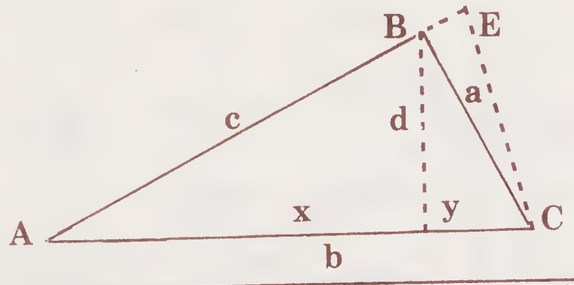
29. Tangente a la curva de 1 grado = $1145.9 \operatorname{tg}(I/2)$

30. Externa a la curva de 1 grado = $1145.9\,\text{exsec}(I/2)$ = $T \operatorname{tg}(I/4) = aa45.9 \operatorname{tg}(I/4)\operatorname{tg}(I/2)$

SOLUCION DE TRIANGULOS OBLICUOS

Para evitar confusión de símbolos; "A" y "a" representan el ángulo más pequeño y su lado opuesto respectivamente. "B" y "b" los mayores, dejando a "C" y "c" para representar a los intermedios. Sin embargo, este orden no siempre puede ser observado con las fórmulas 34 y 35.

Fig. 2



	DADO	PEDIDO	FORMULAS
31	Dos Ang's	3er Ang.	3er Ang. = 180 - (Suma de los dos ang. **dados**)
32	A, B, a	b	$b = \frac{a}{\text{sen } A} \text{ sen } B$; $\therefore\ c = \frac{a}{\text{sen } A} \text{ sen } C$
	B, C, b	c	$c = \frac{b}{\text{sen } B} \text{ sen } C$; $\therefore\ a = \frac{b}{\text{sen } B} \text{ sen } A$
	C, A, c	a	$a = \frac{c}{\text{sen } C} \text{ sen } A$; $\therefore\ b = \frac{c}{\text{sen } C} \text{ sen } B$
33	a, b, c	A, C	Considere el lado más largo "b" dividido por la normal "d" en dos segmentos "x" e "y". Si "d" parte de "B" se tiene la siguiente proporción: $\frac{b}{c+a} = \frac{c-a}{x-y}$ $\therefore\ x-y = \frac{(c+a)(c-a)}{b}$ $\therefore\ \cos A = \frac{x}{c}\ \cos C = \frac{y}{a}$ $\cos A = \frac{b^2 + c^2 - a^2}{2bc} \cos C = \frac{b^2 + a^2 - c^2}{2ab}$
34	a, B, c	$\frac{C-A}{2}$	$\text{tg } \frac{C-A}{2} = \frac{c-a}{c+a} \text{ tg } \frac{C+A}{2}$
	A, b, c	C, a	$c \cos A = x$; $b - x = y$; $c \text{ sen} A = d$ $\therefore\ \text{tg } C = \frac{d}{y}$; $a = \frac{C}{\text{sen } C}$
35	a, b, A	B, c	$\text{sen } B = \frac{b \text{ sen} A}{a}$; $c = \frac{a \text{ sen } C}{\text{sen } A}$

Recuerde: Un ángulo y su suplemento tienen el mismo seno. Como B y E Fig. 2

Grados por cadena de 20 m. D.	Radio de la curva R.	Logaritmo del radio Log. R.	Deflexión por metro d. m.	D.	R.	Log. R.	d. m.
				2° 0	572.99	2. 7581 45	3.00
				2	563.59	7509 67	3.05
				4	554.51	7439 06	3.10
				6	545.70	7369 58	3.15
				8	537.18	7301 19	3.20
0° 10	6875.5	3. 8373 04	0.25	10	528.92	7233 86	3.25
12	5729.6	7581 23	0.30	12	520.90	7167 57	3.30
14	4911.1	6911 76	0.35	14	513.13	7102 27	3.35
16	4297.2	6331 84	0.40	16	505.58	7037 93	3.40
18	3819.7	5820 32	0.45	18	498.26	6974 54	3.45
20	3437.8	5362 74	0.50	20	491.14	6912 06	3.50
22	3125.2	4948 82	0.55	22	484.22	6850 46	3.55
24	2864.8	4570 94	0.60	24	477.50	6789 73	3.60
26	2644.4	4223 32	0.65	26	470.96	6729 84	3.65
28	2455.5	3901 47	0.70	28	464.60	6670 76	3.70
30	2291.8	3601 84	0.75	30	458.40	6612 47	3.75
32	2148.6	3321 55	0.80	32	452.37	6554 96	3.80
34	2022.2	3058 27	0.85	34	446.50	6498 19	3.85
36	1909.9	2810 03	0.90	36	440.78	6442 17	3.90
38	1809.3	2575 23	0.95	38	435.20	6386 85	3.95
40	1718.9	2352 46	1.00	40	429.76	6332 23	4.00
42	1637.0	2140 57	1.05	42	424.45	6278 29	4.05
44	1562.6	1938 54	1.10	44	419.28	6225 01	4.10
46	1494.7	1745 49	1.15	46	414.23	6172 38	4.15
48	1432.4	1560 66	1.20	48	409.30	6120 38	4.20
50	1371.1	1383 38	1.25	50	404.48	6068 99	4.25
52	1322.2	1213 05	1.30	52	399.78	6018 21	4.30
54	1273.3	1049 15	1.35	54	395.19	5968 01	4.35
56	1227.8	0891 21	1.40	56	390.70	5918 39	4.40
58	1185.4	0738 81	1.45	58	386.31	5869 32	4.45
1° 0	1145.9	0591 58	1.50	3° 0'	382.02	5820 81	4.50
2	1109.0	0449 18	1.55	2	377.82	5772 83	4.55
4	1074.3	0311 30	1.60	4	373.71	5725 38	4.60
6	1041.8	0177 67	1.65	6	369.70	5678 44	4.65
8	1011.1	0048 02	1.70	8	365.76	5632 00	4.70
10	982.23	2. 9922 13	1.75	10	361.91	5586 06	4.75
12	954.95	9799 79	1.80	12	358.15	5540 59	4.80
14	929.14	9680 81	1.85	14	354.45	5495 60	4.85
16	904.69	9564 99	1.90	16	350.84	5451 07	4.90
18	881.49	9452 19	1.95	18	347.30	5406 99	4.95
20	859.46	9342 24	2.00	20	343.82	5363 35	5.00
22	838.49	9235 00	2.05	22	340.42	5320 15	5.05
24	818.53	9130 35	2.10	24	337.08	5277 37	5.10
26	799.50	9028 17	2.15	26	333.81	5235 02	5.15
28	781.33	8928 33	2.20	28	330.60	5193 07	5.20
30	763.97	8830 74	2.25	30	327.46	5151 52	5.25
32	747.36	8735 29	2.30	32	324.37	5110 37	5.30
34	731.46	8641 90	2.35	34	321.34	5069 60	5.35
36	716.22	8550 47	2.40	36	318.36	5029 22	5.40
38	701.60	8460 93	2.45	38	315.44	4989 20	5.45
40	687.57	8373 19	2.50	40	312.58	4949 55	5.50
42	674.09	8287 20	2.55	42	309.76	4910 26	5.55
44	661.13	8202 87	2.60	44	307.00	4871 33	5.60
46	648.66	8120 15	2.65	46	304.28	4832 74	5.65
48	636.65	8038 98	2.70	48	301.61	4794 49	5.70
50	625.07	7959 30	2.75	50	298.99	4756 57	5.75
52	613.91	7881 05	2.80	52	296.41	4718 98	5.80
54	603.14	7804 19	2.85	54	293.88	4681 72	5.85
56	592.74	7228 66	2.90	56	291.39	4644 77	5.90
58	582.70	7654 43	2.95	58	288.94	4608 14	5.95

TABLA II — Radios de las curvas métricas

D.	R.	Log. R.	d. m.	D.	R.	Log. R.	d. m.
4° 0'	286.54	2. 4571 81	6.00'	6° 0'	191.07	2. 2812 00	9.00'
2	284.17	4535 78	6.05	2	190.02	2787 96	9.05
4	281.84	4500 05	6.10	4	188.98	2764 05	9.10
6	279.55	4464 61	6.15	6	187.94	2740 28	9.15
8	277.30	4429 46	6.20	8	186.92	2716 63	9.20
10	275.08	4394 60	6.25	10	185.91	2693 12	9.25
12	272.90	4360 01	6.30	12	184.92	2669 73	9.30
14	270.75	4325 69	6.35	14	183.93	2646 46	9.35
16	268.64	4291 64	6.40	16	182.95	2623 33	9.40
18	266.55	4257 86	6.45	18	181.98	2600 31	9.45
20	264.51	4224 34	6.50	20	181.03	2577 41	9.50
22	262.49	4191 08	6.55	22	180.08	2554 64	9.55
24	260.50	4158 07	6.60	24	179.14	2531 98	9.60
26	258.54	4125 31	6.65	26	178.22	2509 45	9.65
28	256.61	4092 79	6.70	28	177.30	2487 03	9.70
30	254.71	4060 52	6.75	30	176.39	2464 72	9.75
32	252.84	4028 48	6.80	32	175.49	2442 53	9.80
34	251.00	3996 68	6.85	34	174.60	2420 45	9.85
36	249.18	3965 11	6.90	36	173.72	2398 49	9.90
38	247.39	3933 77	6.95	38	172.85	2376 63	9.95
40	245.62	3902 66	7.00	40	171.98	2354 89	10.00
42	243.88	3871 77	7.05	42	171.13	2333 25	10.05
44	242.16	3841 09	7.10	44	170.28	2311 72	10.10
46	240.47	3810 63	7.15	46	169.45	2290 30	10.15
48	238.80	3780 38	7.20	48	168.62	2268 99	10.20
50	237.16	3750 35	7.25	50	167.79	2247 77	10 25
52	235.53	3720 52	7.30	52	166.98	2226 67	10.30
54	233.93	3690 89	7.35	54	166.18	2205 66	10.35
56	232.35	3661 46	7.40	56	165.38	2184 76	10.40
58	230.70	3632 24	7.45	58	164.59	2163 95	10.45
5° 0'	229.26	3603 20	7.50	7° 0'	163.80	2143 25	10.50
2	227.74	3574 37	7.55	2	163.03	2122 64	10.55
4	226.24	3545 72	7.60	4	162.26	2102 13	10.60
6	224.76	3517 26	7.65	6	161.50	2081 72	10.65
8	223.30	3488 98	7.70	8	160.75	2061 41	10.70
10	221.87	3460 89	7.75	10	160.00	2041 19	10.75
12	220.44	3432 98	7.80	12	159.26	2021 06	10.80
14	219.04	3405 25	7.85	14	158.53	2001 03	10.85
16	217.66	3377 70	7.90	16	157.80	1981 08	10.90
18	216.29	3350 32	7.95	18	157.08	1961 24	10.95
20	214.94	3323 11	8.00	20	156.37	1941 48	11.00
22	213.60	3296 07	8.05	22	155.66	1921 81	11.05
24	212.29	3269 20	8.10	24	154.96	1902 23	11.10
26	210.98	3242 49	8.15	26	154.27	1882 74	11.15
28	209.70	3215 95	8.20	28	153.58	1863 33	11.20
30	208.43	3189 57	8.25	30	152.90	1844 01	11.25
32	207.17	3163 35	8.30	32	152.22	1824 78	11.30
34	205.93	3137 28	8.35	34	151.55	1805 64	11.35
36	204.71	3111 37	8.40	36	150.89	1786 57	11.40
38	203.50	3085 62	8.45	38	150.23	1767 60	11.45
40	202.30	3060 02	8.50	40	149.58	1748 70	11.50
42	201.12	3034 57	8.55	42	148.93	1729 89	11.55
44	199.95	3009 27	8.60	44	148.29	1711 16	11.60
46	198.80	2984 11	8.65	46	147.66	1692 51	11.65
48	197.66	2959 10	8.70	48	147.03	1673 93	11.70
50	196.53	2934 23	8.75	50	146.40	1655.44	11.75
52	195.41	2909 51	8.80	52	145.78	1637 03	11.80
54	194.31	2884 93	8.85	54	145.17	1618 70	11.85
56	193.22	2860 48	8.90	56	144.56	1600 44	11.90
58	192.14	2836 17	8.95	58	143.95	1582 26	11.95

TABLA II — Radios de las curvas métricas

D.	R.	Log. R.	d. m.	D.	R.	Log. R.	d. m.
8° 0'	143.36	2. 1564 15	12.00	10° 0'	114.74	2. 0597 04	15.00
2	142.76	1546 13	12.05	2	114.36	0582 62	15.05
4	142.17	1528 17	12.10	4	113.98	0568 26	15.10
6	141.59	1510 29	12.15	6	113.60	0553 94	15.15
8	141.01	1492 49	12.20	8	113.23	0539 67	15.20
10	140.44	1474 75	12.25	10	112.86	0525 44	15.25
12	139.87	1457 09	12.30	12	112.49	0511 26	15.30
14	139.30	1439 51	12.35	14	112.13	0497 13	15.35
16	138.74	1421 99	12.40	16	111.76	0483.04	15.40
18	138.18	1404 54	12.45	18	111.40	0469 00	15.45
20	137.63	1387 17	12.50	20	111.05	0455 01	15.50
22	137.08	1369 86	12.55	22	110.69	0441 06	15.55
24	136.54	1352 62	12.60	24	110.34	0427 16	15.60
26	136.00	1335 45	12.65	26	109.98	0413 30	15.65
28	135.47	1318 35	12.70	28	109.63	0399 48	15.70
30	134.94	1301 32	12.75	30	109.29	0385 71	15.75
32	134.41	1284 35	12.80	32	108.94	0371 99	15.80
34	133.89	1267 45	12.85	34	108.60	0358 30	15.85
36	133.37	1250 62	12.90	36	108.26	0344 66	15.90
38	132.86	1233 85	12.95	38	107.92	0331 07	15.95
40	132.35	1217 15	13.00	40	107.58	0317 51	16.00
42	131.84	1200 51	13.05	42	107.25	0304 00	16.05
44	131.34	1183 93	13.10	44	106.92	0290 53	16.10
46	130.84	1167 42	13.15	46	106.59	0277 11	16.15
48	130.35	1150 97	13.20	48	106.26	0263 72	16.20
50	129.85	1134.58	13.25	50	105.93	0250 38	16.25
52	129.37	1118 26	13.30	52	105.61	0237 07	16.30
54	128.88	1101 99	13.35	54	105.29	0223 81	16.35
56	128.40	1085 79	13.40	56	104.97	0210 59	16.40
58	127.93	1069 65	13.45	58	104.65	0197 41	16.45
9° 0'	127.45	1053 57	13.50	11° 0'	104.33	0184 27	16.50
2	126.99	1037 54	13.55	2	104.02	0171 17	16.55
4	126.52	1021 58	13.60	4	103.71	0158 11	16.60
6	126.06	1005 68	13.65	6	103.40	0145 09	16.65
8	125.60	0989 83	13.70	8	103.09	0132 11	16.70
10	125.14	0974 04	13.75	10	102.78	0119 17	16.75
12	124.69	0958 31	13.80	12	102.48	0106 26	16.80
14	124.24	0942 64	13.85	14	102.17	0093 40	16.85
16	123.79	0927 03	13.90	16	101.87	0080 57	16.90
18	123.35	0911 47	13.95	18	101.57	0067 78	16.95
20	122.91	0895 96	14.00	20	101.28	0055 03	17.00
22	122.48	0890 51	14.05	22	100.98	0042 32	17.05
24	122.04	0865 12	14.10	24	100.68	0029 64	17.10
26	121.61	0849 78	14.15	26	100.39	0017 01	17.15
28	121.19	0834 50	14.20	28	100.10	0004 40	17.20
30	120.76	0819 27	14.25	30	99.69	1. 9986 37	17.25
32	120.34	0804 09	14.30	32	99.40	9973 81	17.30
34	119.92	0788 97	14.35	34	99.11	9961 29	17.35
36	119.51	0773 90	14.40	36	98.83	9948 80	17.40
38	119.09	0758 88	14.45	38	98.55	9936 35	17.45
40	118.68*	0743 91	14.50	40	98.26	9923 93	17.50
42	118.28	0729 00	14.55	42	97.98	9911 55	17.55
44	117.87	0714 13	14.60	44	97.71	9899 21	17.60
46	117.47	0699 32	14.65	46	97.43	9886 90	17.65
48	117.07	0684 56	14.70	48	97.15	9874 63	17.70
50	116.68	0669 85	14.75	50	96.88	9862 38	17.75
52	116.28	0655 19	14.80	52	96.61	9850 18	17.80
54	115.89	0640 58	14.85	54	96.34	9838 01	17.85
56	115.51	0626 02	14.90	56	96.07	9825 87	17.90
58	115.12	0611 50	14.95	58	95.80	9813 77	17.95

* Curvas de menos de 100 m de radio deben localizarse por medias cadenas o cuerdas de 10 m

TABLA II — Radios de las curvas métricas

D.	R.	Log. R.	d. m.	D.	R.	Log. R.	d. m.
12° 0'	95.54	1. 9801 70	18.00'	14° 0'	81.90	1. 9132 95	21.00
2	95.27	9789 66	18.05	10	80.94	9081 62	21.25
4	95.01	9777 66	18.10	20	80.00	9030 89	21.50
6	94.75	9765 69	18.15	30	79.08	8980 74	21.75
8	94.49	9753 75	18.20	40	78.18	8931 18	22.00
10	94.23	9741 85	18.25	50	77.31	8882 17	22.25
12	93.97	9729 98	18.30	15° 0'	76.45	8833 71	22.50
14	93.72	9718 14	18.35	10	75.61	8785 80	22.75
16	93.46	9706 33	18.40	20	74.79	8738 40	23.00
18	93.21	9694 56	18.45	30	73.99	8691 52	23.25
				40	73.20	8645 14	23.50
20	92.96	9682 82	18.50	50	72.43	8599 26	23.75
22	92.71	9671 11	18.55				
24	92.46	9659 43	18.60	16° 0'	71.68	8553 85	24.00
24	92.21	9647 78	18.65	10	70.94	8508 92	24.25
28	91.96	9636 16	18.70	20	70.22	8464 45	24.50
30	91.72	9624 58	18.75	30	69.51	8420 44	24.75
32	91.47	9613 03	18.80	40	68.82	8376 87	25.00
34	91.23	9601 50	18.85	50	68.14	8333 73	25.25
36	90.99	9590 01	18.90	17° 0'	67.47	8291 02	25.50
38	90.75	9578 55	18.95	10	66.81	8248 73	25.75
				20	66.17	8206 85	26.00
40	90.51	9567 11	19.00	30	65.54	8165 37	26.25
42	90.28	9555 71	19.05	40	64.93	8124 28	26.50
44	90.04	9544 34	19.10	50	64.32	8083 58	26.75
46	89.80	9533 00	19.15				
48	89.57	9521 68	19.20	18° 0'	63.73	8043 27	27.00
50	89.34	9510 40	19.25	10	63.14	8003 32	27.25
52	89.11	9499 15	19.30	20	62.57	7963 74	27.50
54	88.88	9487 92	19.35	30	62.01	7924 53	27.75
56	88.65	9476 73	19.40	40	61.46	7885 66	28.00
58	88.42	9465 56	19.45	50	60.91	7847 14	28.25
				19° 0'	60.38	7808 97	28.50
13° 0'	88.19	9454 42	19.50	10	59.86	7771 12	28.75
2	87.97	9443 31	19.55	20	59.34	7733 61	29.00
4	87.75	9432 23	19.60	30	58.84	7696 42	29.25
6	87.52	9421 18	19.65	40	58.34	7659 55	29.50
8	87.30	9410 15	19.70	50	57.85	7622 99	29.75
10	87.08	9399 16	19.75				
12	86.86	93 88 19	19.80	20° 0'	57.37	7586 74	30.00
14	86.64	9377 25	19.85	10	56.90	7550 79	30.25
16	86.42	9366 33	19.90	20	56.43	7515 14	30.50
18	86.21	9355 45	19.95	30	55.97	7479 78	30.75
				40	55.52	7444 71	31.00
20	85.99	9344 59	20.00	50	55.08	7409 92	31.25
22	85.78	9333 76	20.05	21° 0'	54.64	7375 41	31.50
24	85.56	9322 95	20.10	10	54.21	7341 18	31.75
26	85.35	9312 18	20.15	20	53.79	7307 21	32.00
28	85.14	9301 42	20.20	30	53.38	7278 51	32.25
30	84.93	9290 70	20.25	40	52.97	7240 08	32.50
32	84.72	9280 00	20.30	50	52.56	7206 90	32.75
34	84.51	9269 33	20.35	22° 0'	52.17	7173 97	33.00
36	84.31	9258 69	20.40	10	51.78	7141 30	33.25
38	84.10	9248 07	20.45	20	51.39	7108 87	33.50
40	83.90	9237 47	20.50	30	51.01	7076 68	33.75
42	83.69	9226 91	20.55	40	50.64	7044 73	34.00
44	83.49	9216 37	20.60	50	50.27	7013 02	34.25
46	83.29	9205 85	20.65	23° 0'	49.91	6981 54	34.50
48	83.09	9195 36	20.70	10	49.55	6950 29	34.75
50	82.89	9184 89	20.75	20	49.20	6919 26	35.00
52	82.69	9174 46	20.80	30	48.85	6888 46	35.25
54	82.49	9164 04	20.85	40	48.51	6857 88	35.50
56	82.29	9153 65	20.90	50	48.17	6827 51	35.75
58	82.10	9143 29	20.95	24° 0'	47.83	6797 35	36.00

* Curvas de menos de 100 m de radio deben localizarse por medias cadenas o cuerdas de 10 m

TABLA III — Tangentes y externas a curvas de grado 1

Angulo	Tang.	Externa	Angulo	Tang.	Externa	Angulo	Tang.	Externa
1°	10.00	.044	11°	110.3	5.30	21°	212.4	19.52
10	11.67	.059	10'	112.0	5.46	10'	214.1	19.83
20	13.33	.078	20	113.7	5.63	20	215.8	20.15
30	15.00	.098	30	115.4	5.79	30	217 6	20.47
40	16.67	.121	40	117.1	5.96	40	219.3	20.79
50	18.34	.147	50	118.8	6.14	50	221.0	21.12
2	20.00	.175	12	120.4	6.31	22	222.7	21.45
10	21.67	.205	10	122.1	6.49	10	224.5	21.78
20	23.34	.238	20	123.8	6.67	20	226.2	22.11
30	25.00	.273	30	125.5	6.85	30	227.9	22.45
40	26.67	.310	40	127.2	7.04	40	229.7	22.79
50	28.34	.350	50	128.9	7.22	50	231.4	23.13
3	30.01	.393	13	130.6	7.41	23	233.1	23.48
10	31.68	.438	10	132.2	7.61	10	234.9	23.82
20	33.34	.485	20	133.9	7.80	20	236.6	24.17
30	35.01	.535	30	135.6	8.00	30	238.4	24.53
40	36.68	.587	40	137.3	8.20	40	240.1	24.88
50	38.35	.641	50	139.0	8.40	50	241.8	25.24
4	40.02	.698	14	140.7	8.61	24	243.6	25.60
10	41.69	.758	10	142.4	8.81	10	245.3	25.96
20	43.35	.820	20	144.1	9.02	20	247.1	26.33
30	45.02	.884	30	145.8	9.23	30	248.8	26.70
40	46.69	.951	40	147.5	9.45	40	250.6	27.07
50	48.36	1.02	50	149.2	9.67	50	252.3	27.45
5	50.03	1.09	15	150.9	8.89	25	254.0	27.82
10	51.70	1.17	10	152.6	10.11	10	255.8	28.20
20	53.37	1.24	20	154.3	10.34	20	257.5	28.59
30	55.04	1.32	30	155.9	10.56	30	259.3	28.97
40	56.71	1.40	40	157.6	10.79	40	261.1	29.36
50	58.38	1.49	50	159.3	11.03	50	262.8	29.75
6	60.06	1.57	16	161.0	11.26	26	264.6	30.14
10	61.73	1.66	10	162.7	11.50	10	266.3	30.54
20	63.40	1.75	20	164.4	11.74	20	268.1	30.94
30	65.07	1.85	30	166.1	11.98	30	269.8	31.34
40	66.74	1.94	40	167.8	12.23	40	271.6	31.74
50	68.42	2.04	50	169.6	12.48	50	273.4	32.15
7	70.09	2.14	17	171.3	12.73	27	275.1	32.56
10	71.76	2.24	10	173.0	12.98	10	276.9	32.97
20	73.43	2.35	20	174.7	13.24	20	278.6	33.39
30	75.11	2.46	30	176.4	13.49	30	280.4	33.81
40	76.78	2.57	40	178.1	13.75	40	282.2	34.23
50	78.46	2.68	50	179.8	14.02	50	283.9	34.65
8	80.13	2.80	18	181.5	14.28	28	285.7	35.08
10	81.81	2.92	10	183.2	14.55	10	287.5	35.51
20	83.48	3.04	20	184.9	14.82	20	289.3	35.94
30	85.16	3.16	30	186.6	15.10	30	291.0	36.38
40	86.83	3.29	40	188.3	15.37	40	292.8	36.82
50	88.51	3.41	50	190.0	15.65	50	294.6	37.26
9	90.19	3.54	19	191.8	15.93	29	296.4	37.70
10	91.86	3.68	10	193.5	16.22	10	298.1	38.15
20	93.54	3.81	20	195.2	16.50	20	299.9	38.60
30	95.22	3.95	30	196.9	16.79	30	301.7	39.05
40	96.90	4.09	40	198.6	17.09	40	303.5	39.51
50	98.58	4.23	50	200.3	17.38	50	305.3	39.96
10	100.3	4.38	20	202.1	17.68	30	307.1	40.42
10	101.9	4.52	10	203.8	17.98	10	308.8	40.89
20	103.6	4.67	20	205.5	18.28	20	310.6	41.35
30	105.3	4.83	30	207.2	18.58	30	312.4	41.82
40	107.0	4.98	40	208.9	18.89	40	314.2	42.30
50	108.7	5.14	50	210.7	19.20	50	316.0	42.77

TABLA III — Tangentes y externas a curvas de grado 1

Angulo	Tang.	Externa	Angulo	Tang.	Externa	Angulo	Tang.	Externa
31°	317.8	43.25	41°	428.4	77.48	51°	546.6	123.7
10'	319.6	43.73	10'	430.3	78.14	10'	548.6	124.6
20	321.4	44.22	20	432.2	78.80	20	550.7	125.4
30	323.2	44.70	30	434.2	79.49	30	552.7	126.3
40	325.0	45.19	40	436.1	80.16	40	554.8	127.2
50	326.8	45.68	50	438.0	80.84	50	556.8	128.1
32	328.6	46.18	42	439.9	81.53	52	558.9	129.0
10	330.4	46.68	10	411.8	82.21	10	561.0	129.9
20	332.2	47.18	20	443.7	82.90	20	563.0	130.8
30	334.0	47.69	30	445.6	83.60	30	565.1	131.8
40	335.8	48.19	40	447.5	84.30	40	567.2	132.7
50	337.6	48.70	50	449.5	85.00	50	569.3	133.6
33	339.4	49.22	43	451.4	85.70	53	571.3	134.5
10	341.3	49.73	10	453.3	86.11	10	573.4	135.5
20	343.1	50.25	20	455.2	87.12	20	575.5	136.4
30	344.9	50.77	30	457.2	87.83	30	577.6	137.3
40	346.7	51.30	40	459.1	88.55	40	579.7	138.3
50	348.5	51.83	50	461.0	89.27	50	581.8	139.2
34	350.3	52.36	44	463.0	90.00	54	583.9	140.2
10	352.2	52.89	10	464.9	90.72	10	586.0	141.1
20	354.0	53.43	20	466.9	91.45	20	588.1	142.1
30	355.8	53.97	30	468.8	92.19	30	590.2	143.1
40	357.6	54.52	40	470.8	92.93	40	592.3	144.0
50	359.5	55.06	50	472.7	93.67	50	594.4	145.0
35	361.3	55.61	45	474.7	94.42	55	596.5	146.0
10	363.1	56.16	10	476.6	95.16	10	598.7	146.9
20	365.0	56.72	20	478.6	95.92	20	600.8	147.9
30	366.8	57.28	30	480.5	96.67	30	602.9	148.9
40	368.7	57.84	40	482.5	97.43	10	605.0	149.9
50	370.5	58.40	50	484.5	98.20	50	607.2	150.9
36	372.3	58.97	46	486.4	98.96	56	609.3	151.9
10	374.2	59.54	10	488.4	99.73	10	611.4	152.9
20	376.0	60.12	20	490.4	100.5	20	613.6	153.9
30	377.9	60.69	30	492.3	101.3	30	615.7	154.9
40	379.7	61.27	40	494.3	102.1	40	617.9	156.0
50	381.6	61.86	50	496.3	102.8	50	620.0	157.0
37	383.4	62.44	47	498.3	103.6	57	622.2	158.0
10	385.3	63.03	10	500.2	104.4	10	624.3	159.0
20	387.1	63.63	20	502.2	105.2	20	626.5	160.1
30	389.0	64.22	30	504.2	106.0	30	628.7	161.1
40	390.9	64.82	40	506.2	106.8	40	630.8	162.2
50	392.7	65.42	50	508.2	107.6	50	633.0	163.2
38	394.6	66.03	48	510.2	108.4	58	635.2	164.3
10	396.4	66.64	10	512.2	109.3	10	637.4	165.3
20	398.3	67.25	20	514.2	110.1	20	639.6	166.4
30	400.2	67.86	30	516.2	110.9	30	641.8	167.5
40	402.0	68.48	40	518.2	111.7	40	643.9	168.5
50	403.9	69.10	50	520.2	112.5	50	646.1	169.6
39	405.8	69.73	49	522.2	113.4	59	648.3	170.7
10	407.7	70.36	10	524.2	114.2	10	650.5	171.8
20	409.6	70.99	20	526.3	115.1	20	652.7	172.9
30	411.4	71.62	30	528.3	115.9	30	655.0	174.0
40	413.3	72.26	40	530.3	116.8	40	657.2	175.1
50	415.2	72.90	50	532.3	117.6	50	659.4	176.2
40	417.1	73.54	50	534.4	118.5	60	661.6	177.3
10	419.0	74.19	10	536.4	119.3	10	663.8	178.4
20	420.9	74.84	20	538.4	120.2	20	666.1	179.5
30	422.8	75.49	30	540.5	121.0	30	668.3	180.6
40	424.7	76.15	40	542.5	121.9	40	670.5	181.8
50	426.5	76.81	50	544.5	122.8	50	672.8	182.9

TABLA III — Tangentes y externas a curvas de grado 1

Angulo	Tang.	Externa	Angulo	Tang.	Externa	Angulo	Tang.	Externa
61°	675.0	184.0	71°	817.4	261.6	81°	978.7	361.1
10'	677.3	185.2	10'	819.9	263.1	10'	981.6	362.9
20	679.5	186.3	20	822.4	264.6	20	984.5	364.8
30	681.8	187.5	30	825.0	266.1	30	987.4	366.7
40	684.0	188.6	40	827.5	267.5	40	990.3	368.6
50	686.3	189.8	50	830.0	269.0	50	993.5	370.5
62	688.5	190.9	72	832.6	270.5	82	996.1	372.4
10	690.8	192.1	10	835.1	272.0	10	999.1	374.4
20	693.1	193.3	20	837.7	273.5	20	1002.0	376.3
30	695.4	194.5	30	840.2	275.0	30	1005.0	378.2
40	697.7	195.7	40	842.8	276.6	40	1007.9	380.2
50	699.9	196.9	50	845.4	278.1	50	1010.9	382.1
63	702.2	198.0	73	847.9	279.6	83	1013.8	384.1
10	704.5	199.3	10	850.5	281.1	10	1016.8	386.1
20	706.8	200.5	20	853.1	282.7	20	1019.8	388.1
30	709.1	201.7	30	855.7	284.2	30	1022.8	390.1
40	711.4	202.9	40	858.3	285.8	40	1025.8	392.0
50	713.7	204.1	50	860.9	287.4	50	1028.8	394.1
64	716.1	205.3	74	863.5	288.9	84	1031.8	396.1
10	718.4	206.6	10	866.1	290.5	10	1034.8	398.1
20	720.7	207.8	20	868.8	292.1	20	1037.9	400.1
30	723.0	209.0	30	871.4	293.7	30	1040.9	402.2
40	725.4	210.3	40	874.0	295.3	40	1043.9	404.2
50	727.7	211.5	50	876.7	296.9	50	1047.0	406.3
65	730.0	212.8	75	879.3	298.5	85	1050.1	408.3
10	732.4	214.0	10	882.0	300.1	10	1053.1	410.4
20	734.7	215.3	20	884.6	301.7	20	1056.2	412.5
30	737.1	216.6	30	887.3	303.3	30	1059.3	414.6
40	739.4	217.9	40	889.9	305.0	40	1062.4	416.7
50	741.8	219.1	50	892.6	306.6	50	1065.5	418.8
66	744.2	220.4	76	895.3	308.3	86	1068.6	420.9
10	746.5	221.7	10	898.0	309.9	10	1071.7	423.1
20	748.9	223.0	20	900.7	311.6	20	1074.8	425.2
30	751.3	224.3	30	903.4	313.3	30	1078.0	427.3
40	753.7	225.6	40	906.1	314.9	40	1081.1	429.5
50	756.1	227.0	50	908.8	317.6	50	1084.3	431.7
67	758.5	228.3	77	911.5	318.3	87	1087.4	433.8
10	760.9	229.6	10	914.2	320.0	10	1090.6	436.0
20	763.3	230.9	20	917.0	321.7	20	1093.8	438.2
30	765.7	232.3	30	919.7	323.4	30	1097.0	440.4
40	768.1	233.6	40	922.4	325.1	40	1100.2	442.6
50	770.5	235.0	50	925.2	326.9	50	1103.4	444.9
68	772.9	236.3	78	928.0	328.6	88	1106.6	447.1
10	775.4	237.7	10	930.7	330.3	10	1109.8	449.3
20	777.8	239.0	20	933.5	332.1	20	1113.1	451.6
30	780.2	240.4	30	936.3	333.8	30	1116.3	453.9
40	782.7	241.8	40	939.0	335.6	40	1119.6	456.1
50	785.1	243.2	50	941.8	337.4	50	1123.8	453.4
69	787.6	244.5	79	944.6	339.2	89	1126.1	460.7
10	790.0	245.9	10	947.4	340.9	10	1129.4	463.0
20	792.5	247.3	20	950.2	342.7	20	1132.7	465.3
30	795.0	248.7	30	953.1	344.5	30	1136.0	467.6
40	797.4	250.2	40	955.9	346.3	40	1139.3	470.0
50	799.9	251.6	50	958.7	348.2	50	1142.6	472.3
70	802.4	253.0	80	961.5	350.0	90	1145.9	474.7
10	804.9	254.4	10	964.4	351.8	10	1149.3	477.0
20	807.4	255.9	20	967.2	353.6	20	1152.6	479.4
30	809.9	257.3	30	970.1	355.5	30	1156.0	481.8
40	812.4	258.7	40	973.0	357.3	40	1159.3	484.2
50	814.9	260.2	50	975.8	359.2	50	1162.7	486.6

TABLA III Tangentes y externas a curvas de grado 1

Angulo	Tang.	Externa	Angulo	Tang.	Externa	Angulo	Tang.	Externa
91°	1166.1	489.0	101°	1390.1	655.6	111°	1667.3	877.2
10'	1169.5	491.4	10'	1394.3	658.8	10'	1672.5	881.5
20	1172.9	493.9	20	1398.4	662.0	20	1677.8	885.8
30	1176.3	496.3	30	1402.5	665.2	30	1683.0	890.2
40	1179.8	498.8	40	1406.7	668.5	40	1688.3	894.5
50	1183.2	501.2	50	1410.9	671.7	50	1693.6	898.9
92	1186.6	503.7	102	1415.1	675.0	112	1698.9	903.3
10	1190.1	506.2	10	1419.3	678.2	10	1704.3	907.8
20	1193.6	508.7	20	1423.6	681.5	20	1709.6	912.2
30	1197.1	511.2	30	1427.8	684.9	30	1715.0	916.7
40	1200.5	513.7	40	1432.1	688.2	40	1720.4	921.2
50	1204.0	516.3	50	1436.3	691.5	50	1725.9	925.7
93	1207.6	518.8	103	1440.6	694.9	113	1731.3	930.8
10	1211.1	521.4	10	1444.9	698.3	10	1736.8	934.8
20	1214.6	523.9	20	1449.3	701.6	20	1742.3	939.4
30	1218.2	526.5	30	1453.6	705.0	30	1747.8	944.1
40	1221.7	529.1	40	1458.0	708.5	40	1753.4	948.7
50	1225.3	531.7	50	1462.3	711.9	50	1759.0	953.4
94	1228.9	534.3	104	1466.7	715.4	114	1764.6	958.1
10	1232.4	536.9	10	1471.1	718.8	10	1770.2	962.8
20	1236.0	539.6	20	1475.6	722.3	20	1775.9	967.6
30	1239.7	542.2	30	1480.0	725.8	30	1781.5	972.3
40	1243.3	544.9	40	1484.4	729.4	40	1787.3	977.1
50	1246.9	547.6	50	1488.9	732.9	50	1793.0	982.0
95	1250.6	550.3	105	1493.4	736.5	115	1798.8	986.8
10	1254.2	553.0	10	1497.9	740.0	10	1804.5	991.7
20	1257.9	555.7	20	1502.4	743.6	20	1810.3	996.6
30	1261.6	558.4	30	1507.0	747.2	30	1816.2	1001.6
40	1265.3	561.1	40	1511.5	750.9	40	1822.1	1006.5
50	1269.0	563.9	50	1516.1	754.5	50	1828.0	1011.5
96	1272.7	566.6	106	1520.7	758.2	116	1833.9	1016.5
10	1276.4	569.4	10	1525.3	761.9	10	1839.8	1021.6
20	1280.1	572.2	20	1529.9	765.6	20	1845.8	1026.7
30	1283.9	575.0	30	1534.6	769.3	30	1851.8	1031.8
40	1287.7	577.8	40	1539.3	773.0	40	1857.8	1036.9
50	1291.5	580.6	50	1543.9	776.8	50	1863.9	1042.1
97	1295.2	583.5	107	1548.6	780.6	117	1870.0	1047.2
10	1299.0	586.3	10	1553.4	781.4	10	1876.1	1052.5
20	1302.9	589.2	20	1558.1	788.2	20	1882.3	1057.7
30	1306.7	592.1	30	1562.9	792.0	30	1888.4	1063.0
40	1310.5	594.9	40	1567.6	795.9	40	1894.6	1068.3
50	1314.4	597.8	50	1572.4	799.7	50	1900.9	1073.6
98	1318.2	600.8	108	1577.2	803.6	118	1907.1	1079.0
10	1322.1	603.7	10	1582.1	807.6	10	1913.4	1084.4
20	1326.0	606.6	20	1586.9	811.5	20	1919.8	1089.8
30	1329.9	609.6	30	1591.8	815.4	30	1926.1	1095.3
40	1333.8	612.6	40	1596.7	819.4	40	1932.5	1100.8
50	1337.8	615.5	50	1601.6	823.4	50	1938.9	1106.3
99	1341.7	618.5	109	1606.5	827.4	119	1945.4	1111.9
10	1345.7	621.5	10	1611.5	831.5	10	1951.9	1117.5
20	1349.6	624.6	20	1616.5	835.5	20	1958.4	1123.1
30	1353.6	627.6	30	1621.6	839.6	30	1965.0	1128.8
40	1357.6	630.7	40	1626.5	843.7	40	1971.5	1134.5
50	1361.6	633.7	50	1631.5	847.8	50	1978.2	1140.2
100	1365.7	636.8	110	1636.6	851.9	120	1984.8	1145.9
10	1369.7	639.9	10	1641.6	856.1	10	1991.5	1151.7
20	1373.8	643.0	20	1646.7	860.3	20	1998.2	1157.5
30	1377.8	646.2	30	1651.9	864.5	30	2005.0	1163.4
40	1381.9	649.3	40	1657.0	868.7	40	2011.8	1169.3
50	1386.0	652.5	50	1662.2	873.0	50	2018.6	1175.2

TABLA III Tangentes y externas a curvas de grado 1

Angulo	Tang.	Externa	Angulo	Tang.	Externa	Angulo	Tang.	Externa
121°	2025.4	1181.2	125°	2201.3	1335.8	129°	2402.5	1515.9
10'	2032.3	1187.2	10'	2209.2	1342.7	10'	2411.5	1524.0
20	2039.2	1193.2	20	2217.0	1349.7	20	2420.6	1532.2
30	2046.2	1199.3	30	2225.0	1356.8	30	2429.7	1540.5
40	2053.2	1205.4	40	2232.9	1363.9	40	2438.9	1548.8
50	2060.2	1211.6	50	2241.0	1371.0	50	2448.2	1557.1
122	2067.3	1217.7	126	2249.0	1378.2	130	2457.5	1565.6
10	2074.4	1224.0	10	2257.1	1385.4	10	2466.8	1574.0
20	2081.6	1230.2	20	2265.3	1392.7	20	2476.2	1582.6
30	2088.8	1236.5	30	2273.5	1400.0	30	2485.7	1591.2
40	2096.0	1242.9	40	2281.7	1407.4	40	2495.3	1599.9
50	2103.2	1249.2	50	2290.0	1414.8	50	2504.9	1603.6
123	2110.5	1255.6	127	2298.4	1422.3	131	2514.5	1617.4
10	2117.9	1262.1	10	2306.8	1429.8	10	2524.2	1626.2
20	2125.3	1268.6	20	2315.2	1437.4	20	2434.0	1635.2
30	2132.7	1275.1	30	2323.7	1445.0	30	2543.9	1644.1
40	2140.1	1281.7	40	2332.3	1452.7	40	2553.8	1653.2
50	2147.6	1288.3	50	2340.9	1460.4	50	2563.8	1662.3
124	2155.2	1295.0	128	2349.5	1468.1	132	2573.8	1671.5
10	2162.8	1301.7	10	2358.2	1476.0	10	2583.9	1680.7
20	2170.4	1308.4	20	2367.0	1483.8	20	2594.1	1690.0
30	2178.1	1315.2	30	2375.8	1491.8	30	2604.3	1699.4
40	2185.8	1322.0	40	2384.6	1499.7	40	2614.6	1708.8
50	2193.5	1328.9	50	2393.5	1507.8	50	2625.0	1718.3

Correcciones para las Tangentes, añada

Angulo	3° Cur.	5° Cur.	7° Cur.	9° Cur.	11° Cur.	12° Cur.	14° Cur.	16° Cur.	18° Cur.	20° Cur.	22° Cur.	24° Cur.
10°	.00	.01	.01	.01	.01	.00	.00	.00	.01	.01	.01	.01
20°	.01	.01	.02	.02	.03	.01	.01	.01	.01	.01	.01	.02
30°	.01	.02	.03	.03	.04	.01	.01	.02	.02	.02	.02	.02
40°	.01	.03	.04	.05	.06	.02	.02	.02	.02	.03	.03	.03
50°	.02	.03	.05	.06	.07	.02	.02	.03	.03	.03	.04	.04
60°	.02	.04	.06	.08	.09	.02	.03	.03	.04	.04	.05	.05
70°	.03	.05	.07	.09	.11	.03	.03	.04	.05	.05	.06	.06
80°	.03	.06	.08	.11	.13	.04	.04	.05	.05	.06	.07	.07
90°	.04	.07	.10	.13	.16	.04	.05	.06	.06	.07	.08	.09
100°	.05	.09	.12	.15	.19	.05	.06	.07	.08	.09	.10	.10
110°	.06	.10	.14	.19	.23	.06	.07	.08	.09	.10	.11	.12
120°	.07	.12	.17	.23	.28	.07	.09	.10	.11	.12	.14	.15
130°	.08	.15	.21	.28	.34	.09	.11	.12	.14	.15	.17	.19

Correcciones para Externas. Añada

Angulo	3° Cur.	5° Cur.	7° Cur.	9° Cur.	11° Cur.	12° Cur.	14° Cur.	16° Cur.	18° Cur.	20° Cur.	22° Cur.	24° Cur.
20°	.001	.001	.002	.002	.002	.001	.001	.001	.001	.001	.001	.001
30°	.001	.002	.004	.005	.006	.001	.002	.002	.002	.003	.003	.003
40°	.002	.004	.006	.008	.010	.003	.003	.004	.004	.005	.005	.006
50°	.004	.007	.010	.013	.016	.001	.005	.006	.007	.007	.008	.009
60°	.006	.011	.015	.020	.025	.006	.008	.009	.010	.011	.012	.013
70°	.01	.02	.02	.03	.04	.01	.01	.01	.01	.02	.02	.02
80°	.01	.02	.03	.04	.05	.01	.02	.02	.02	.02	.02	.03
90°	.02	.03	.04	.05	.07	.02	.02	.02	.03	.03	.03	.04
100°	.02	.04	.06	.07	.09	.02	.03	.03	.04	.04	.04	.05
110°	.03	.05	.07	.10	.12	.03	.04	.04	.05	.05	.06	.07
120°	.04	.07	.10	.13	.16	.04	.05	.06	.06	.07	.08	.09
130°	.05	.10	.14	.18	.22	.06	.07	.08	.09	.10	.11	.12

TABLA IV Cuerdas a un radio 1, para trazo de ángulos

Angulo	0'	10'	20'	30'	40'	50'	DIFERENCIAS 2' 4' 6' 8' 10'
0°	.0000	.0029	.0058	.0087	.0116	.0145	6 12 17 23 29
1°	.0175	.0204	.0233	.0262	.0291	.0320	
2°	.0349	.0378	.0407	.0436	.0465	.0494	
3°	.0524	.0553	.0582	.0611	.0640	.0669	
4°	.0698	.0727	.0756	.0785	.0814	.0843	
5°	.0872	.0901	.0931	.0960	.0989	.1018	
6°	.1047	.1076	.1105	.1134	.1163	.1192	
7°	.1221	.1250	.1279	.1308	.1337	.1366	
8°	.1395	.1424	.1453	.1482	.1511	.1540	
9°	.1569	.1598	.1627	.1656	.1685	.1714	
10°	.1743	.1772	.1801	.1830	.1859	.1888	
11°	.1917	.1946	.1975	.2004	.2033	.2062	
12°	.2091	.2119	.2148	.2177	.2206	.2235	
13°	.2264	.2293	.2322	.2351	.2380	.2409	
14°	.2437	.2466	.2495	.2524	.2553	.2582	
15°	.2611	.2639	.2668	.2697	.2726	.2755	
16°	.2783	.2812	.2841	.2870	.2899	.2927	
17°	.2956	.2985	.3014	.3042	.3071	.3100	
18°	.3129	.3157	.3186	.3215	.3244	.3272	6 11 17 23 29
19°	.3301	.3330	.3358	.3387	.3416	.3444	
20°	.3473	.3502	.3530	.3559	.3587	.3616	
21°	.3645	.3673	.3702	.3730	.3759	.3788	
22°	.3816	.3845	.3873	.3902	.3930	.3959	
23°	.3987	.4016	.4044	.4073	.4101	.4130	6 11 17 23 28
24°	.4158	.4187	.4215	.4244	.4272	.4300	
25°	.4329	.4357	.4386	.4414	.4442	.4471	
26°	.4499	.4527	.4556	.4584	.4612	.4641	
27°	.4669	.4697	.4725	.4754	.4782	.4810	
28°	.4838	.4867	.4895	.4923	.4951	.4979	
29°	.5008	.5036	.5064	.5092	.5120	.5148	
30°	.5176	.5204	.5233	.5261	.5289	.5317	6 11 17 22 28
31°	.5345	.5373	.5401	.5429	.5457	.5485	
32°	.5513	.5541	.5569	.5597	.5625	.5652	
33°	.5680	.5708	.5736	.5764	.5792	.5820	
34°	.5847	.5875	.5903	.5931	.5959	.5986	
35°	.6014	.6042	.6070	.6097	.6125	.6153	
36°	.6180	.6208	.6236	.6263	.6291	.6319	
37°	.6346	.6374	.6401	.6429	.6456	.6484	
38°	.6511	.6539	.6566	.6594	.6621	.6649	5 11 16 22 27
39°	.6676	.6704	.6731	.6758	.6786	.6813	
40°	.6840	.6868	.6895	.6922	.6950	.6977	
41°	.7004	.7031	.7059	.7086	.7113	.7140	
42°	.7167	.7195	.7222	.7249	.7276	.7303	
43°	.7330	.7357	.7384	.7411	.7438	.7465	
44°	.7492	.7519	.7546	.7573	.7600	.7627	

Las diferencias estan en diez milésimos del Radio

TABLA IV Cuerdas a un radio 1, para trazo de ángulos

Angulo	0'	10'	20'	30'	40'	50'	DIFERENCIAS 2' 4' 6' 8' 10'
45°	.7654	.7681	.7707	.7734	.7761	.7788	5 11 16 21 27
46°	.7815	.7841	.7868	.7895	.7922	.7948	
47°	.7975	.8002	.8028	.8055	.8082	.8108	
48°	.8135	.8161	.8188	.8214	.8241	.8267	
49°	.8294	.8320	.8347	.8373	.8400	.8426	5 11 16 21 26
50°	.8452	.8479	.8505	.8531	.8558	.8584	
51°	.8610	.8636	.8663	.8689	.8715	.8741	5 10 16 21 26
52°	.8767	.8794	.8820	.8846	.8872	.8898	
53°	.8924	.8950	.8976	.9002	.9028	.9054	
54°	.9080	.9106	.9132	.9157	.9183	.9209	
55°	.9235	.9261	.9287	.9312	.9338	.9364	5 10 15 21 26
56°	.9389	.9415	.9441	.9466	.9492	.9518	
57°	.9543	.9569	.9594	.9620	.9645	.9671	5 10 15 20 26
58°	.9696	.9722	.9747	.9772	.9798	.9823	5 10 15 20 25
59°	.9848	.9874	.9899	.9924	.9950	.9975	
60°	1.0000	1.0025	1.0050	1.0075	1.0101	1.0126	
61°	1.0151	1.0176	1.0201	1.0226	1.0251	1.0276	
62°	1.0301	1.0326	1.0351	1.0375	1.0400	1.0425	
63°	1.0450	1.0475	1.0500	1.0524	1.0549	1.0574	
64°	1.0598	1.0623	1.0648	1.0672	1.0697	1.0721	
65°	1.0746	1.0771	1.0795	1.0819	1.0844	1.0868	5 10 15 20 24
66°	1.0893	1.0917	1.0912	1.0966	1.0990	1.1014	5 10 15 19 24
67°	1.1039	1.1063	1.1087	1.1111	1.1136	1.1166	
68°	1.1184	1.1208	1.1232	1.1256	1.1280	1.1304	5 10 14 19 24
69°	1.1328	1.1352	1.1376	1.1400	1.1424	1.1448	
70°	1.1472	1.1495	1.1519	1.1543	1.1567	1.1590	
71°	1.1614	1.1638	1.1661	1.1685	1.1709	1.1732	5 9 14 19 24
72°	1.1756	1.1779	1.1803	1.1826	1.1850	1.1873	5 9 14 19 23
73°	1.1896	1.1920	1.1943	1.1966	1.1990	1.2013	
74°	1.2036	1.2060	1.2083	1.2106	1.2129	1.2152	
75°	1.2175	1.2198	1.2221	1.2244	1.2267	1.2290	5 9 14 18 23
76°	1.2313	1.2336	1.2359	1.2382	1.2405	1.2428	
77°	1.2450	1.2473	1.2496	1.2518	1.2541	1.2564	
78°	1.2586	1.2609	1.2632	1.2654	1.2677	1.2699	
79°	1.2722	1.2744	1.2766	1.2789	1.2811	1.2833	4 9 13 18 22
80°	1.2856	1.2878	1.2900	1.2922	1.2945	1.2967	
81°	1.2989	1.3011	1.3033	1.3055	1.3077	1.3099	
82°	1.3121	1.3143	1.3165	1.3187	1.3209	1.3231	4 9 13 17 22
83°	1.3252	1.3274	1.3296	1.3318	1.3339	1.3361	
84°	1.3383	1.3404	1.3426	1.3447	1.3469	1.3490	
85°	1.3512	1.3533	1.3555	1.3576	1.3597	1.3619	4 9 13 17 21
86°	1.3640	1.3661	1.3682	1.3704	1.3725	1.3746	4 8 13 17 21
87°	1.3767	1.3788	1.3809	1.3830	1.3851	1.3872	
88°	1.3893	1.3914	1.3935	1.3956	1.3977	1.3997	
89°	1.4018	1.4039	1.4060	1.4080	1.4101	1.4122	4 8 12 17 21

Las diferencias están en diez milésimos del Radio